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THE BROWN HOISTING
MACHINERY COMPANY~INCORPORATED

"BROWNHOIST"
CRANES

MAIN OFFICE AND WORKS CLEVELAND OHIO U.S.A.

BRANCH OFFICES

NEW YORK

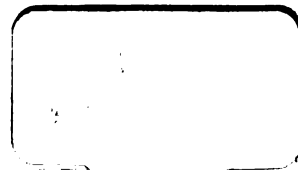
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LONDON



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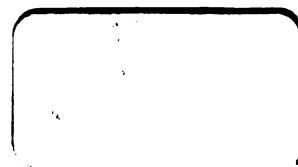


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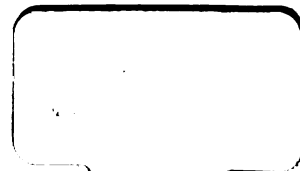


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The Brown Hoisting Machinery Company

Incorporated

“BROWNHIST” CRANES

Main Office and Works
CLEVELAND, OHIO
U. S. A.

EASTERN OFFICE
26 CORTLANDT STREET
NEW YORK

PITTSBURG OFFICE
FRICK BUILDING

1903

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by The Brown Hoisting & Conveying Machine Co.

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by The Brown Hoisting Machinery Co.

1749.03

THE BROWN HOISTING MACHINERY COMPANY

INCORPORATED

MAINTENANCE
DEPT. OF EXHIBITS Main Office and Works, CLEVELAND, OHIO, U. S. A.

JUN 20 1917

FOUNDED IN 1880

TRANSFERRED TO
HARVEY H. BROWN, TREASURER

Capital, Full Paid, \$2,000,000

FAYETTE BROWN, President

HARVEY H. BROWN, Treasurer

ALEX. E. BROWN, Vice President and General Manager

GEO. C. WING, Secretary and Counsel

Eastern Office: 26 Cortlandt Street, New York, N. Y.

Pittsburg Office: Frick Building, Pittsburg, Pa.

*Address all Communications to
the Company at nearest Office*

CABLE ADDRESS: "Brownhoist," Cleveland, New York

CODES USED: ABC, A1, Lieber's, Directory, and Engineering Telegraph



OLD WORKS



MAIN OFFICE AND WORKS OF THE BROWN HOISTING MACHINERY COMPANY.

1345 St. Clair Street, Cleveland, Ohio, U. S. A.

Direct track connection with Lake Shore & Michigan Southern and Pennsylvania Railroads.

Regarding Quotations and Deliveries.

IN MAKING INQUIRIES, when referring to pages in this Catalog, be sure to state Crane Catalog, 1903 Edition, as the plates on these pages do not correspond with former editions.

ILLUSTRATIONS are from photographs of cranes manufactured by us, and substantially represent the machines described, but we do not bind ourselves to every detail, preferring to give purchasers the benefit of any improvements we may make from time to time.

SPECIAL QUOTATIONS, with drawings and specifications, embodying any modifications of the design illustrated, will be supplied upon application.

DELIVERY will be F. O. B. our works, Cleveland, Ohio, unless otherwise specified.

SERVICES OF AN EXPERT will be furnished to set up and start cranes under a special arrangement.

ORDERS FOR EXPORT must be accompanied by a remittance, and arrangements made to pay balance against ocean bills of lading, through some responsible banking house in New York City.

PACKING FOR SHIPMENT by railroad to any part of the United States, Canada or Mexico is included in prices given, but extra charges will be made for packing for all export ocean shipments.

CABLE ADDRESS. We use the A B C (4th Edition), A 1, LIEBER'S, ENGINEERING TELEGRAPH, and DIRECTORY Codes. Our Cable Address for our Main Office and Works at Cleveland, Ohio, is "BROWNHOIST, CLEVELAND, OHIO"; for our New York Office, "BROWNHOIST, NEW YORK," and for our European Office, "BROWNHOIST, LONDON." Telegraphic Address of our European Office is "SHOVELLING, LONDON." Code words are given, where practicable, on each page, with additional code words arranged conveniently in the back of this book.

Introduction.

ON the following pages are shown types of cranes built by us at our works, Cleveland, Ohio.

In this book we merely show our standard designs (with several exceptions), but we cover the crane field fully, and therefore are prepared to submit designs and prices on any changes from our standards, or on special cranes, designed for any particular work.

We do not build cheap cranes in any sense of the word, but strictly high-class cranes, combining every modern improvement, approved safety devices and best design. With the "Weston Patent" Safety Lowering Device, which we own and use exclusively, IT IS IMPOSSIBLE TO DROP A SUSPENDED LOAD, whether through "use, misuse, carelessness or neglect," or, in the case of our hand-operated cranes, to INJURE A WORKMAN BY FLYING HANDLES IN LOWERING A LOAD. These features alone make our cranes superior, and they have been appreciated by most large concerns and railroad companies in this country.

We are the SOLE PATENTEES AND BUILDERS of the Cantilever and Gantry Cranes shown on pages 83 to 108 inclusive, and have attained in these machines, owing to their peculiar construction, speeds much beyond anything ever attempted by any other crane builders in this country or in Europe. The success of these cranes is well attested by the fact that we receive orders for them from all parts of the world.

Besides building cranes of all kinds, we are builders of the well-known "Brownhoist" system of coal and ore handling machinery, as used along the Great Lakes and at other places in this country. Our machinery handled about 90 per cent. of the lake coal and ore traffic for the season of 1902.

We issue a special illustrated catalog of 170 pages describing our hoisting and conveying machinery, which will be sent on application. Also a special circular describing our automatic dumping tubs, skips and self-filling shovels.

We are always ready to cheerfully answer all inquiries and quote our best prices.

THE BROWN HOISTING MACHINERY COMPANY, INCORPORATED.

The Brown Hoisting Machinery Company, Incorporated.

Steam and Electric Locomotive Cranes.
Steam Wrecking Cranes.*

NOTE: See also Balanced Cantilever Locomotive Crane on page 95.

See additional Code Words on page 255.

* For Hand Wrecking Cranes see page 167.

Steam Locomotive and Wrecking Cranes.

All inquiries and orders for Locomotive and Wrecking Cranes should state the following particulars:

1. Maximum load to be lifted.
2. Radius at which maximum load is to be lifted.
3. Gauge of track crane is to run on.
4. Description of work crane is to perform.
5. If for hoisting out of a pit, state height of hoist.
6. State any unusual condition, if any exist.
7. State if "full cab" or "half cab" is wanted.
8. State if variable radius is wanted.
9. State if draw bar attachment is wanted.
10. State if you want boiler lagged.
11. State if you want expert sent to erect crane.
12. State Crane Catalog, 1903 Edition, if reference is made to pages in this book.

Important Notice to Intending Purchasers of Locomotive Cranes.

THE CAPACITY OR POWER, in tons, of a crane must in all cases be taken as the greatest weight the crane is calculated to lift at a given radius, measured from the center of the crane or truck to the center of the hook; and in direct proportion to the increasing or decreasing of this radius, so is the weight which the crane will lift varied, *i. e.*, short radius for heavy loads, and proportionately lighter loads at greater radii. The radius of a fixed crane may be greater than that of a portable crane of the same power. It is, however, most desirable for the stability of the portable crane, and with a view to economy and rapid working, TO KEEP THE RADIUS AS SHORT AS POSSIBLE, and where possible, for heavy loads or long booms, to make the gauge of rail seven or eight feet.

JIBS OR BOOMS. When cranes with fixed booms are supplied, the height of the jib generally equals the radius, but in all cases where they are to travel about a yard or dock, the height of the doors or archways under which they are to pass should be given.

LAGGING BOILERS. The boilers are lagged with non-conducting covering to economize fuel and protect the operator from heat.

SHIPPING. In shipping, all parts are properly packed and marked, so they can be readily put together by any machinist, and it is not necessary to have an expert from our works.

WORKMANSHIP. All wearing surfaces on our cranes are unusually large, and ample means are provided for lubrication. The workmanship and materials are the very best of their respective kinds.

TESTING. All cranes are thoroughly tested under steam before leaving our works.

CAB. A light iron house is furnished to protect the operator and machinery, consisting of a roof only, and called "Half Cab," or with a roof and sides, called "Full Cab." Full cabs are figured as an extra on all cranes. Standard Cranes include half cab.

OUTRIGGERS. Outriggers and jacks can be supplied with the 5, 10 and 15 ton cranes, to give additional stability, if wanted, but they are invariably an extra part.

OPERATION BY ELECTRICITY. We have built several electrically operated locomotive cranes, and they are very successful. We show several pictures of these cranes on the following pages, and will be pleased to quote prices on application.

OPERATION BY COMPRESSED AIR. We can also equip cranes for operation by compressed air, and have furnished several cranes recently that have been operated in this way.

OIL BURNING CRANES. We can equip any of our Locomotive Cranes to burn oil as fuel, and some cranes so equipped are here shown.

TUBS, BUCKETS, ETC. We manufacture a full line of automatic tubs for handling coal and ore, skips for handling rock, sand, etc., and self-filling clam shell and orange peel buckets, both single and double rope, any of which are adapted for use with our locomotive cranes. A special circular will be sent on application.

10 Ton Steam Locomotive Crane.

DESCRIPTION. The photographic picture on page 13 is taken from a 10 ton steam locomotive crane with variable radius gear, and shows the general construction, except that in many cases a house or roof of corrugated iron is built over the mechanism, as shown on page 16, to protect it and the operator from the weather. It will be seen that the main platform of the crane is formed of a heavy center casting, to which is bolted a frame made up of steel beams, the truck axle bearing brackets being fastened to the underside of the steel frame and the center casting carrying on its top the support for the steel slip ring through which the crane is rotated upon its axis. Above this is the rotating bed or housing, on which all of the mechanism is assembled. Mounted on the rear of this bed is the boiler, and between this and the mechanism is the operator's platform, with the controlling levers within convenient reach.

Motive power is furnished by a pair of vertical engines connected to the same crank shaft, which is supported by the two inclined frames forming a part of the rotating bed or housing. Power is taken from this crank shaft for each of the three functions, hoisting, rotating and



10 TON LOCOMOTIVE CRANE.
Lifting 10 Tons at 15 Feet Radius.

propelling, by means of suitable gears and clutches. For all capacities up to 20 tons, these cranes are usually constructed to travel on tracks of standard gauge, in order to utilize the ordinary railroad tracks in yards and buildings. For cranes of larger capacity, or where exceptional stability is required, a broader gauge is used.

MOTIVE POWER. The motive power, comprising a boiler and pair of engines, is mounted upon the rotating bed, and has no connection with the main platform or truck of the crane except through the central pin or axis. Vertical engines for the 10 ton crane are found preferable to horizontal ones, as causing less vibration to the machine. This is an important factor, and is particularly so when a crane is to be mounted upon a bridge or other structure which might be injuriously affected by any excessive vibratory action. Two engines, coupled at right angles, are necessary, in order to insure prompt starting from any position and to equalize the power.

VALVE GEAR. A link motion valve gear is used, which affords nice adjustment of speed and power, and which enables the motion of the engines to be quickly reversed.

DISTRIBUTION OF POWER. The distribution of power is further controlled by means of clutches, of which there is one for transmitting power to the hoisting train, two for operating the rotating gear, and one for the propelling gear, the motion of which latter is reversed by reversing the engines.

ROTATION. For rotating, two clutches are provided, as it is frequently desired to rotate in either direction while hoisting is being effected.



10 TON STANDARD LOCOMOTIVE CRANE.

1903 Improved Pattern.

The above Crane is standard gauge, with boom 24 ft. long, giving 26 ft. 6 in. extreme radius, with steam variable radius attachment, counterweight attachment, track clamps and draw bar attachment, as described in the preceding pages. The same Crane is shown on page 16 with complete cab. This Crane is made for 4 ft. 8½ in. gauge, 7 ft. gauge, or 8 ft. gauge. Weight, without counterweight, 58,000 lbs.

Code Word, complete Crane, HIMMELSTON.

TRAVELING. The function which requires the greatest power is that of traveling, especially if the crane is used as a switching engine, which is frequently the case.

CAN USE ALL THREE MOTIONS AT ONCE. The power needed for this purpose is ample rotating and travel

THE SEVERAL
BE DESCRIBED AS
taken from the first or gear driving a large tached to the hoisting vided also with a large ing suspended on wire barrel, having sufficient the rope in a single wrap

L O W E R I N G
held and controlled, in strap brake, operated

such construction as to easily admit of wide variation in the rate of speed of lowering, without danger of the load accelerating too quickly and getting away from the operator. With the engine in continuous motion the operator releases the strap brake by his foot, and hoists by throwing in the lever of the hoisting clutch. He may also control the motion of the load by



ENGINES AND DRUMS OF 10 TON LOCOMOTIVE CRANE.
Also showing brake sometimes applied to these Cranes.

to effect hoisting, ing simultaneously.

FUNCTIONS MAY
FOLLOWS: Power is crank shaft by a clutch spur gear wheel at-barrel, the latter pro-strap brake, the load be-rope, and the drum, or capacity to receive all of without overlapping.

LOAD. The load is lowering, by a powerful by a foot lever, and of

stopping or changing the speed of the engines, either by means of the reversing lever, connected with the link motion, or by the throttle valve. This facility of control enables an expert operator to manipulate the crane with great rapidity and yet with perfect smoothness and safety.

ROTATING MECHANISM, GRAFTON SLIP RING. The rotating mechanism has been a troublesome feature in cranes of other makes, but by the adoption of the "Grafton Patent Slip Ring" (The Brown Hoisting Machinery Co., sole licensees), used in all locomotive cranes built by us, it is made as reliable, smooth and safe as the other functions. This device consists of a large wrought steel ring, having spur teeth cut on its periphery and fitting loosely upon a turned path or bed provided for it on the main frame or truck. The rollers which support the rotating bed bear on top of this loose ring, and the friction thus developed tends to prevent its turning. The upper surface or roller path of this steel ring is beveled, and the rollers, which are of steel, are conical in shape, thereby giving a perfect bearing in the rotating movement of crane. A pinion engages with this slip ring, and is driven by a gear wheel, on the upper end of its vertical shaft, which in turn gears into one or the other of two bevel wheels mounted on a transverse horizontal shaft, each operated by a friction clutch. Rotation of the crane is effected in any direction by throwing in either one or the other of these two clutches, thereby causing the pinion to turn. The effect of this is to cause the pinion to tend to travel upon the periphery of the slip ring, and this will be the result if this motion be made slowly and gradually. If, however, the rotating power be thrown suddenly into gear, the inertia of the superincumbent parts will be greater than the frictional resistance of the slip ring, which latter will, therefore, rotate backward until the inertia of the mass has been overcome, when the crane will begin to rotate and the ring will cease to slip.



10 TON LOCOMOTIVE CRANE, WITH COMPLETE CAB.

These several parts are so nicely adjusted that by this simple means all tendency to shock is avoided, and rotation may be effected in either direction or may be reversed as frequently and as quickly as desired without any danger of breaking or even straining any part of the mechanism.

VALUE OF THE GRAFTON SLIP RING. The gain in time and convenience to the operator by using this slip ring is very apparent when the crane is seen in service. A crane thus constructed as to its rotating gear is far safer, more convenient and more rapid in action than one not provided with such frictional safety device, and our cranes therefore have an actual daily capacity from 20 to 40 per cent. greater than any other make of crane not so equipped, to say nothing of the reduced cost of repairs.

TRAVELING MECHANISM. The traveling mechanism is driven by power taken from a horizontal transverse shaft, by a clutch operating through bevel gears and driving a vertical shaft located in the center of the machine, which passes downward through the hollow steel center pin which unites the upper and lower beds or frames, and forms the axis of rotation, the lower end of this vertical shaft carrying a bevel pinion gearing into a bevel wheel mounted on a horizontal longitudinal shaft between the two truck axles. Each end of this shaft carries a bevel pinion, gearing into a bevel wheel on the respective truck axles. The power so transmitted thus operates to rotate the truck wheels and propel the crane. Owing to the overturning tendency of the load, which may be such relatively to the counter-balance as to throw the whole weight on one pair of truck wheels and leave the other pair unloaded, and also to the fact that the load may be at any point in the whole circle of rotation,

it is necessary to apply power to all four of the truck wheels to make certain that there shall always be sufficient tractive force to propel the crane under all conditions, and especially on tracks that are poor or wet, and also on curves and grades.

VARIABLE RADIUS GEAR. The purpose of this is to change the radius of the hook, by raising or lowering the head of the boom. This enables the stability of the crane to be increased for heavy loads by shortening the radius, and its "reach" to be increased for light loads by lengthening the radius. It is also useful as enabling the boom to be lowered to pass under bridges or doorways. This mechanism consists of a drum mounted on top of the housings and suitably connected by a clutch with the motive power, whereby the wire rope guys which support the outer end of the boom may be wound or unwound to vary their length.

FRICTION CLUTCHES. Obviously, the form of friction clutch is an important factor in these machines. In European practice simple "jaw" clutches are largely used, notwithstanding their crudeness and tendency to cause shock and injury to the mechanism unless the motion of the parts is nearly stopped before the "jaw" clutches are engaged. "Cone" clutches are also used in Europe, and by some recent builders in America, but with indifferent success, because of the small frictional surface they afford, the severe pressure they produce, and the resulting rapidity of wear. To overcome these difficulties The Brown Hoisting Machinery Company has developed a modified form of a disc friction clutch which perfectly meets the requirements, and which has proved thoroughly satisfactory.

BOILER. The boiler is of the vertical tubular type, possessing quick steaming qualities,

economy of fuel, and large steam capacity. It is lagged with non-conducting material and covered with planished iron. The platform under it is utilized as a water tank, the weight of which and the boiler serves largely to counterbalance the crane.

TOOLS. A complete set of firing tools, oil can, wrenches, etc., are provided with each crane.

DRAW BAR ATTACHMENT. The truck is provided at each end with a coupling bar, whereby the crane may be coupled to the cars and used as a shifting engine, for which purpose it is frequently employed.

RAIL CLIPS. All our cranes are provided with rail clips for fastening the crane to the rails, to give greater stability when needed, or to hold the crane securely on a grade, or where absolute rigidity is required.

COUNTERWEIGHT ATTACHMENT. This consists of an iron box running the entire length of the crane on either side and on both ends of same, formed by the framing of the truck frame, which can be filled with pig iron, scrap, cement or other material, and forms another method of giving greater stability. This filling is always furnished by purchaser.

CAB will be lettered and numbered as desired by purchaser.

COMPLETE CRANE. The 10 ton Standard Crane comprises the crane as described above, with half cab, as shown on page 13.

The following are extra parts:

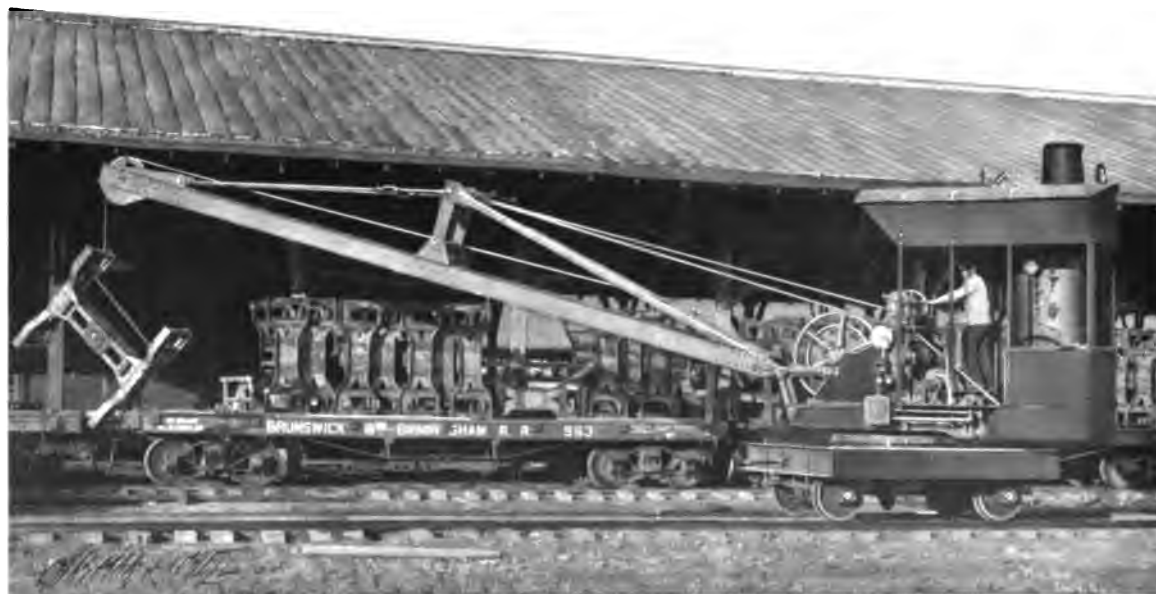
						Code Word.
Full Cab	.	.	.	.	.	GERULUM.
Outriggers	.	.	.	.	.	GERUPFTES.

Shipping weight, 58,000 pounds (without counterweights).

Code word, complete crane, HIMMELSTON.



10 TON LOCOMOTIVE CRANE WITHOUT CAB.



10 TON LOCOMOTIVE CRANE, STANDARD GAUGE, 30 FT. RADIUS.

With raised boom heel for unloading gondola cars.



10 TON LOCOMOTIVE CRANE WITHOUT CAB.

The above photograph shows our 10 ton Locomotive Crane in use by the Louisville Water Works, Louisville, Ky., laying 36 in. water main. The crane is shown in service on temporary track laid astride the pipe trench. This track is in sections, and is picked up and laid in front of the crane by the crane itself. At some points, where there is ample room, the track and crane are placed alongside the trench.

5-7 1/2 Ton Locomotive Crane.

The description given for the 10 ton Standard Crane is equally applicable to this crane, the only differences being in the engines, which are horizontal instead of vertical; the substitution of chain for hoisting instead of wire rope; and slight changes in design of the clutches.

This crane is complete with steam variable radius, giving 24 ft. extreme radius, firing tools, track clamps, etc., as shown on opposite page.

The following are extra parts:

	Code Word
Outrigger Attachment,	GERUPFTES
Full Cab,	GERULUM

This crane is made 4 ft. 8 1/2 in. gauge, 7 ft. gauge, or 8 ft. gauge.

Shipping weight, 40,000 pounds (without Counterweight).

Code Word, complete crane, HIGGINSIE.



5-7½ TON STANDARD LOCOMOTIVE CRANE.

Described on opposite page.

3 Ton Locomotive Crane.



3 TON STANDARD LOCOMOTIVE CRANE.

The 3 ton Locomotive Crane varies from the foregoing description of the 10 ton crane as follows:

The engines are horizontal instead of vertical; the entire base frame is of cast iron instead of part steel framing; hoisting chain instead of wire rope, and jaw and cone clutches.

This crane has steam variable radius, giving 19 ft. extreme radius, and is complete with firing tools, track clamps, etc., as shown on the opposite page.

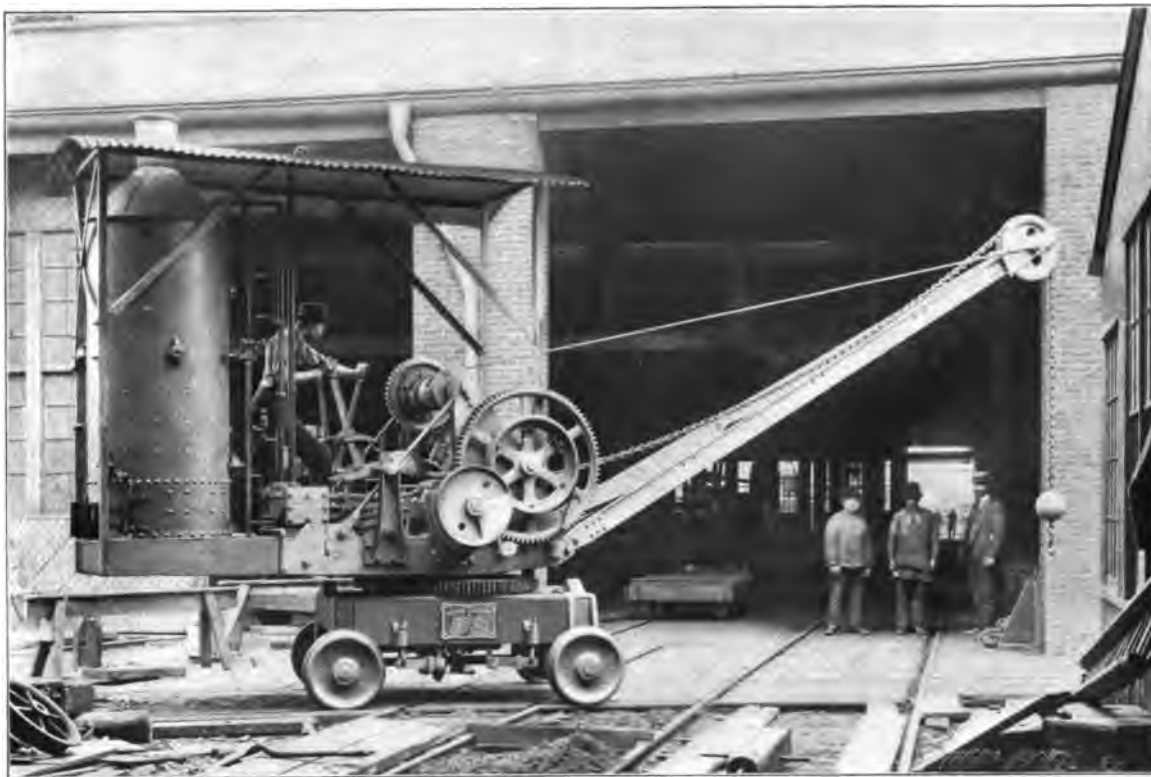
The following is an extra part:

Full Cab, Code Word
GERULUM.

This crane is made for 3 ft. gauge, or 4 ft. 8½ in. gauge.

Weight, 22,000 pounds (without Counterweight).

Code Word, complete crane, HIEBWAFTE.



3 TON STANDARD LOCOMOTIVE CRANE.

Described on opposite page.

15 Ton Locomotive Crane.



15 TON LOCOMOTIVE CRANE.
Lifting 15 Tons at 14 ft. Radius.

The 15 ton Locomotive Crane is similar to the 10 ton Crane described on page 11, except it has two equalizing trucks, each with four wheels, with propelling gears outside connected and curved boom.

The following is an extra part:

Code Word.

Full cab, **GERULUM**

This crane is made for 4 ft. 8½ in., 7 ft. or 8 ft. gauge.

Weight complete, 104,000 pounds.

Code Word, complete crane, **HINSTOS-SEN.**



15 TON STANDARD LOCOMOTIVE CRANE.

Columbia Chemical Co., Barberton, Ohio.

20 Ton Standard Locomotive Crane.

The photograph on the opposite page shows our 20 ton Standard Locomotive Crane with variable radius boom, standard gauge. This crane differs radically from the preceding cranes, being mounted on equalizers, to better distribute the load, and to take curves. Trucks are of cast steel, supporting a cast iron base frame. Boiler has steam pump for feed, in addition to injector. Crane is provided with Gould Automatic Couplers, for attaching to freight cars. The mechanism and operation are the same as for the smaller size cranes, described on preceding pages. Extreme radius of regular boom is 20 ft. 6 in.

This crane is complete with half cab, automatic couplers and variable radius gear.

This crane can also be built for 7 ft. or 8 ft. gauge.

Shipping weight, 120,521 pounds.

Code Word, complete crane, HIPPOMEDON.



20 TON LOCOMOTIVE CRANE.

Described on opposite page.



10 TON LOCOMOTIVE CRANE.

Medina Quarry Company, Albion, New York.

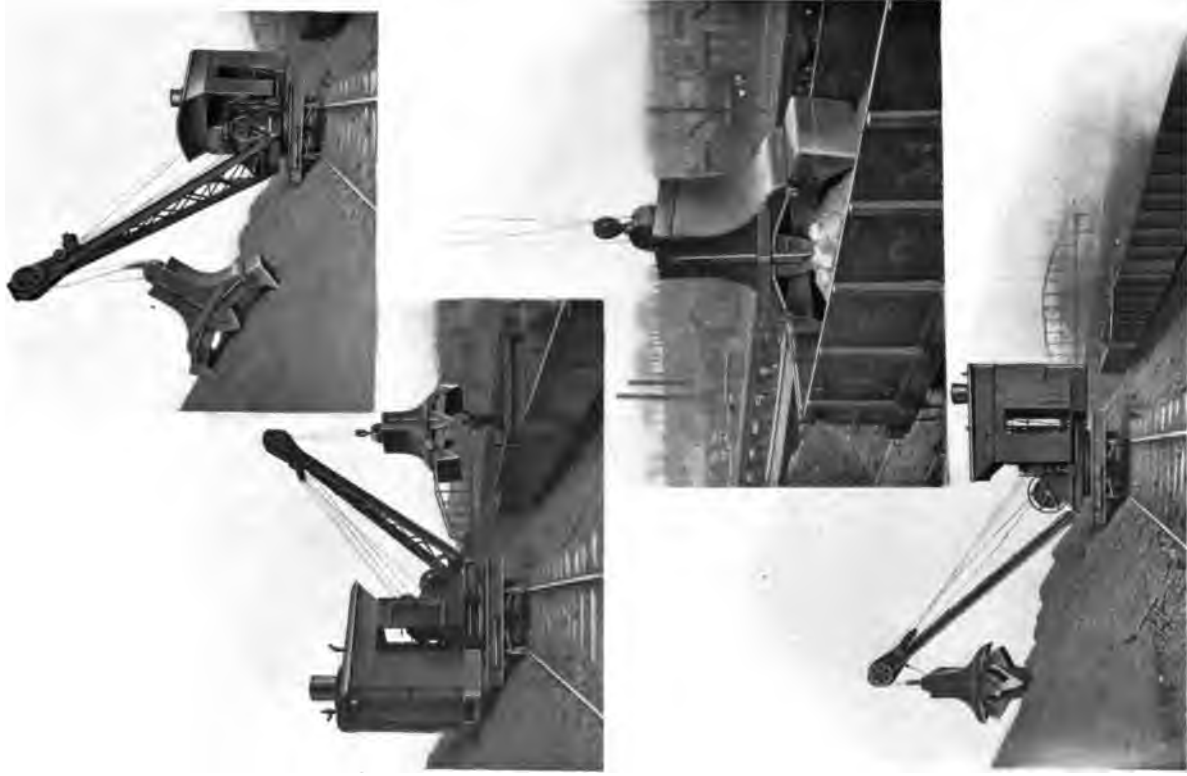


**10 TON LOCOMOTIVE CRANE. STANDARD GAUGE, 40 FT. RADIUS,
WITH RAISED BOOM HEEL.**

John Goll & Co., Contractors, Philadelphia.



10 TON LOCOMOTIVE CRANE, 3 FT. GAUGE, WITH STABILITY WHEELS.
Cie de Boleo, Guaymas, Mexico.



The pictures show a Brownhoist 10 Ton Locomotive Crane, standard gauge, 26 1/4 feet radius, operating a two-rope Brownhoist special 22 cu. ft. ore grab bucket, handling iron ore for U. S. Steel Corporation, McKeesport, Pa.



The picture shows three 3 Ton Brownhoist Locomotive Cranes, with 40 foot jibs, 3 feet gauge, on the Paia plantation of the Haiku Sugar Co., Hawaiian Islands. Cranes are equipped to burn crude oil.



5 TON LOCOMOTIVE CRANE TEARING UP CABLE CONDUIT.

The above photograph shows one of our 5 ton Locomotive Cranes with special short boom, variable radius, used by the Consolidated Traction Co., Pittsburg, Pa., tearing up old cable railway conduit, preparatory to the abandonment of their cable system in favor of electricity.



10 TON LOCOMOTIVE CRANE.

The above picture shows one of our 10 ton Locomotive Cranes, with special boom 45 feet long, handling steel rails at the works of the Illinois Steel Co., Chicago, Ill. The boom was lengthened by the purchaser, as shown above, after crane had been in use some time.



3 TON LOCOMOTIVE CRANE.

The Lorain Steel Company, Johnstown, Pa.
Having two fixed radii of 30 ft. and 14 ft., and raised bed.



10 TON LOCOMOTIVE CRANES FOR CONTRACTORS' USE.

The above picture shows our 10 ton Locomotive Crane, 8 ft. gauge, as used by Messrs. E. D. Smith & Co., contractors, in digging the wheel pits for the Cataract Construction Co. and the Niagara Falls Power Co., at Niagara Falls, N. Y. Two of our 10 ton cranes were used on this work, each having fixed booms 40 ft. radius, with drums arranged to take 180 ft. of hoist. These cranes were the only means of getting the workmen in and out of the pit.



5-7 ½ TON LOCOMOTIVE CRANE, 3 FT. GAUGE.

Arranged with swivel trucks, outriggers, etc., for logging. Chicago Mill & Lumber Co.



5-7½ TON LOCOMOTIVE CRANE, 35 FT. RADIUS.

For coaling locomotives Louisville & Nashville Ry.



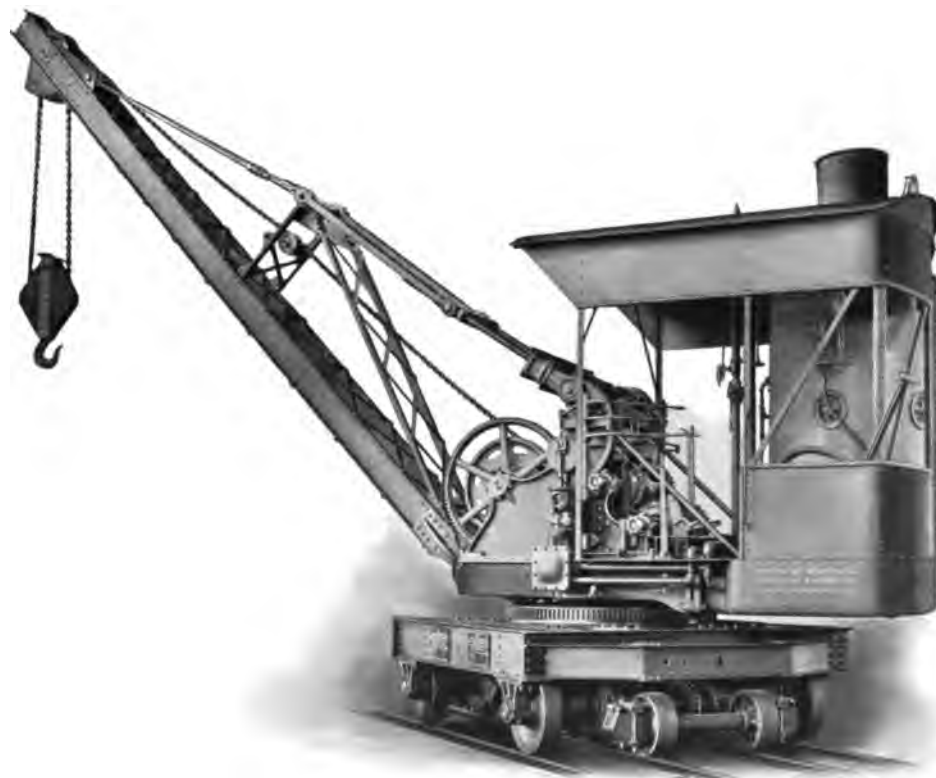
3 TON LOCOMOTIVE CRANE.

The above picture shows our 3 ton Locomotive Crane, standard gauge, equipped with special boom 35 feet long, giving 21 feet radius, for handling coal in the yards of the Louisville & Nashville Railroad and Illinois Central Railroad, at various points, for coaling locomotives.



10 TON LOCOMOTIVE CRANE FOR CONTRACTORS' USE.

The above pictures show our 10-ton Locomotive Crane, 8 ft. gauge, with 40 ft. fixed radius boom, having a divided drum, for working a two-rope orange peel bucket of $\frac{3}{4}$ cubic yard capacity, as used by the National Contracting Company, at New Orleans, La., digging canals for the city sewerage system. Two of these cranes were used on this work. The top photograph shows the bucket open. The bucket can be disconnected and crane used in the usual way, as shown in the lower picture. This crane will lift 3 tons at 40 ft. radius, at the rate of 250 feet per minute.



SPECIAL 10 TON LOCOMOTIVE CRANE, 35 FT. RADIUS, 3 FT. GAUGE, WITH STABILITY WHEELS.



3 TON ELECTRIC LOCOMOTIVE CRANE, STANDARD GAUGE, 18 FT. RADIUS.

Operated with G E 52 motor. River works of General Electric Co., Lynn, Mass.



10 TON ELECTRIC LOCOMOTIVE CRANE, STANDARD GAUGE.

Lorain Foundry Co., Lorain, Ohio.



10 TON ELECTRIC LOCOMOTIVE CRANE, STANDARD GAUGE, 26 1-2 FT. RADIUS.



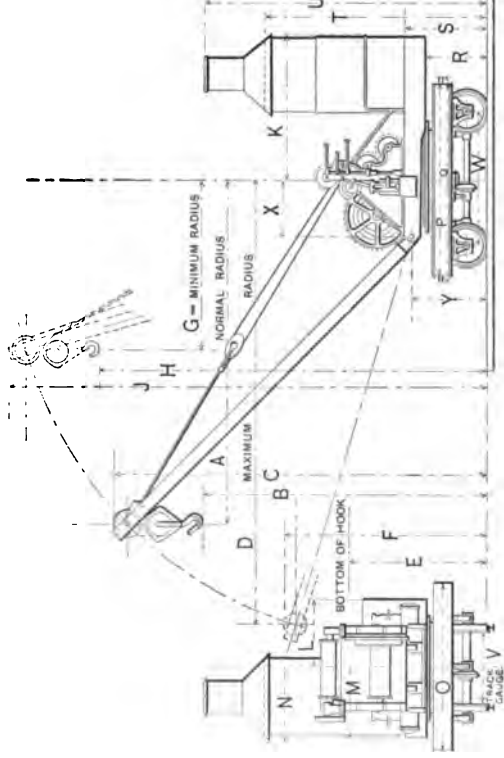
10 TON ELECTRIC LOCOMOTIVE CRANE, STANDARD GAUGE.

Operating two-rope clam shell bucket.

Details of Locomotive Cranes.

Capacity or size of Crane.....	3 Ton	5-7½ Ton	10 Ton	15 Ton	20 Ton
Code Word for Standard Crane	Hiebwaiffe	Higginsle	Himmelstön	Hinstöesen	Hippomedon
Size of Cylinders of Engines...	5½" x 9"	6½" x 10"	9" x 7"	9" x 7"	11" x 8"
Speed of Engines, R. P. M....	266	240	350	350	225
Boiler, Diameter.....	36"	40"	54"	54"	58"
Boiler, Size of Tubes.....	2½"	3"	2½"	2½"	3"
Working Steam Pressure.....	80 lbs.	80 lbs.	100 lbs.	100 lbs.	100 lbs.
Radius of Stand. Boom. Var.	19' 0"	24' 0"	26' 6"	26' 6"	20' 6¼"
Radius of Stand. Boom. Var.	10' 0"	10' 0"	10' 0"	10' 0"	10' 0"
Radius of Stand. Boom. Fixed	16' 0"	18' 0"			
Hoist from top of rail. Min.	15' 6"	21' 6"	21' 5"	21' 10"	18' 0"
Rad.....					
Hoist from top of rail. Max.	3' 9"	5' 10"	8' 0"	7' 6"	2' 1½"
Rad.....					
Hoist from top of rail. Fixed	12' 3"	16' 6"			
Rad.....	⅝"	1½"			
Size of Hoisting Chain.....			1'	1'	¾"
Size of Hoisting Rope.....					
Number of parts of Rope or Chain.....	1	2	2	3	4
Diameter of Truck Wheels..	20"	28"	28"	24"	28"
Capacity of Water Tank.....	570 lbs.	700 lbs.	1,200 lbs.	1,600 lbs.	4,000 lbs.
Capacity of Coal Bunker.....	480 lbs.	650 lbs.	650 lbs.	650 lbs.	2,000 lbs.
Weight Counterw't when used	4,500 lbs.	11,000 lbs.	16,000 lbs.		
Weight of Crane without C. W.	22,000 lbs.	40,000 lbs.	58,000 lbs.	104,000 lbs.	120,000 lbs.
Wheel Base.....	5' 6"	7' 11"	8' 0"	11' 6" *	9' 9½" *
Extreme Height to top of Stack	14' 10¼"	16' 7¼"	16' 10¾"	17' 3½"	21' 3½"
Extreme Width of Crane.....	5' 3"	10' 0"	10' 0"	6' 10"	8' 8"
Hoisting Speed, empty, ft. per min.....	264	124	164	110	100
Hoisting Speed, full load, ft. per min.....	135	75	42½	28	25
Traveling Speed, empty, ft. per minute.....	630	475	630	420	400
Traveling Speed full load, ft. per min.....	520	460	500	330	300
Rotating Speed, empty, R.P.M.	9	7½	6	4	4
.. full load, R.P.M.	6	5	4	2½	2½
Possible Grade, empty, per cent.....	6	6	7	6	6
Possible Grade, full load, per cent.....	5	5	6	5	5
Minimum Radius Curve.....	50'	70'	70'	100'	100'
Draw-bar pull.....	1,200 lbs.	5,000 lbs.	5,000 lbs.	7,000 lbs.	9,000 lbs.

* Total Wheel Base. Double Trucks.



CLEARANCE DIMENSIONS FOR STANDARD LOCOMOTIVE CRANES.																								
Cap Tons	A	B	C	D	E	F	G	H	J	K	L	M	N	O	P	Q	R	S	T	U	V	W	X	Y
3	15' 0"	13' 6"	16' 0"	10' 0"	3' 9"	9' 10"	10' 0"	15' 6"	21' 2"	8' 8"	3' 3 1/2"	3' 4 1/2"	2' 4"	5' 3"	6' 2"	7' 6"	3' 0 1/2"	3' 10 1/2"	10' 10 1/2"	14' 8 1/2"	4' 8 1/2"	5' 0"	2' 2 1/2"	2' 0"
5-7 1/2	15' 0"	13' 6"	16' 0"	10' 0"	5' 10"	10' 0"	10' 0"	21' 26'	9' 3"	3' 3 1/2"	3' 3 1/2"	3' 0 1/2"	8 1/2"	10' 0"	11' 12'	4' 0 1/2"	4' 11 1/2"	4' 13 1/2"	16' 16'	7' 7 1/2"	8 1/2"	7' 3 1/2"	4' 8"	
10	15' 0"	13' 6"	16' 0"	10' 0"	5' 10"	10' 0"	10' 0"	21' 26'	9' 3"	3' 3 1/2"	3' 3 1/2"	3' 0 1/2"	8 1/2"	10' 0"	11' 12'	4' 0 1/2"	4' 11 1/2"	4' 13 1/2"	16' 16'	7' 7 1/2"	8 1/2"	7' 3 1/2"	4' 8"	
15	15' 0"	13' 6"	16' 0"	10' 0"	5' 10"	10' 0"	10' 0"	21' 26'	9' 3"	3' 3 1/2"	3' 3 1/2"	3' 0 1/2"	8 1/2"	10' 0"	11' 12'	4' 0 1/2"	4' 11 1/2"	4' 13 1/2"	16' 16'	7' 7 1/2"	8 1/2"	7' 3 1/2"	4' 8"	
20	15' 0"	13' 6"	16' 0"	10' 0"	5' 10"	10' 0"	10' 0"	21' 26'	9' 3"	3' 3 1/2"	3' 3 1/2"	3' 0 1/2"	8 1/2"	10' 0"	11' 12'	4' 0 1/2"	4' 11 1/2"	4' 13 1/2"	16' 16'	7' 7 1/2"	8 1/2"	7' 3 1/2"	4' 8"	

* Total Wheel Base—Double Trucks.

FOR SPECIAL GAUGES.

Cap. Tons	O	V
2	5' 3"	3' 0"
5	10' 0"	3' 0"
10	10' 0"	7' 0"

Price List of Locomotive Cranes.

F. O. B. Cleveland, Ohio.

Capacity.....	3 Ton	5-7½ Ton	10 Ton	15 Ton	20 Ton
Code Word.....	Hiebwaiffe	Higginsle	Himmelston	Hinstossee	Hippomedon
Price. Standard Gauge.....	\$	\$	\$	\$	\$
3' 0" Gauge.....	\$	\$	\$	\$	\$
7' 0" Gauge.....	\$	\$	\$	\$	\$
8' 0" Gauge.....	\$	\$	\$	\$	\$
Superstructure only.....	\$	\$	\$	\$	\$
The following parts can be deducted from above if not wanted.					
Half Cab.....	\$	\$	\$	\$	\$
Draw Bars.....	\$	\$	\$	\$	\$
Boiler Covering.....	\$	\$	\$	\$	\$
Counterweight Frame.....	\$	\$	\$	\$	\$
Steam Variable Radius.....	\$	\$	\$	\$	\$
The following parts are extras to be added to above prices if wanted.					
Sides and Ends to Cab.....	\$	\$	\$	\$	\$
Outriggers.....	\$	\$	\$	\$	\$
Extra Boom per Foot.....	\$	\$	\$	\$	\$
Double Drums*.....	\$	\$	\$	\$	\$
Intermediate Fixed Radius†..	\$	\$	\$	\$	\$
Raised Boom Heels‡.....	\$	\$	\$	\$	\$
Boxing for Export.....	\$	\$	\$	\$	\$
Electrical Equipment.....	\$	\$	\$	\$	\$
Net Weight.....	22,000 lbs. †	40,000 lbs.	58,000 lbs.	104,000 lbs.	120,000 lbs.
Gross Weight.....	26,500 lbs.	51,000 lbs.	74,000 lbs.		130,000 lbs.
Weight Heaviest Piece.....	5,280 lbs.	6,920 lbs.	8,935 lbs.		40,000 lbs.
Measurement Heaviest Piece..	96 cu. ft.	110 cu. ft.	153 cu. ft.		578 cu. ft.
Total Measurement.....	660 cu. ft.	813 cu. ft.	1,172 cu. ft.		2,705 cu. ft.

* For operating two-rope Grab Bucket.

† 3' 0" gauge, gross weight, 26,500 lbs., net 22,000 lbs.

‡ See page 39.
§ See page 22.

Lifting Capacities of Locomotive Cranes in Pounds.

Radius.	3 Ton		5-7½ Ton		10 Ton		15 Ton		20 Ton	
	With	Without	With	Without	With	Without	With	Without	With	Without
	Counterweight.		Counterweight.		Counterweight.		Counterweight.		Counterweight.	
10 Feet	7,400	Minimum Radius, 10 ft. 0 in.	14,300	Minimum Radius, 10 ft. 0 in.	26,300	Minimum Radius, 10 ft. 0 in.	37,000	Minimum Radius, 10 ft. 0 in.	46,000	Minimum Radius, 10 ft. 0 in.
12 "	6,000		11,400		20,000		30,000		34,000	
13 "			7,800		15,600		22,500		27,000	
16 "	4,000				13,000		19,700		24,000	
17 "	2,400		5,900		11,200		15,600		19,200	
20 "	1,400		4,400		8,800		13,800		17,000	
25 "	600		2,300		10,700		11,200		15,000	
30 "					9,400		7,700		9,000	
12 "			17,100		4,100		7,400		11,000	
15 "			12,800		5,000		5,900		12,700	
18 "			10,100				4,500			
20 "			8,800				3,100			
24 "			7,000							
26½ "			6,100							
30 "			5,000							
35 "										
40 "										
<p>These lifting capacities are based on tracks being in good condition. If tracks are in bad condition, these lifting capacities will be somewhat reduced.</p> <p>Cranes will travel, or revolve full circle, with loads as here shown. Capacities are given for cranes not fastened to track in any way.</p> <p>By using track clamps these lifting capacities are increased, and by using outriggers and jack screws they are still further increased.</p>										
12 Feet	7 ft. Gauge		8 ft. Gauge							
15 "										
18 "										
20 "										
24 "										
26½ "										
30 "										
35 "										
40 "										
12 Feet										
15 "										
18 "										
20 "										
24 "										
26½ "										
30 "										
35 "										
40 "										

40 Ton Steam Wrecking Crane.

See picture on opposite page.

CAPACITY. Without the use of outriggers, the crane will lift:

30,000 pounds at 16 ft. radius,

22,000 pounds at 20 ft. radius,

16,000 pounds at 25 ft. radius.

With outriggers, the crane will lift:

80,000 pounds at 20 ft. radius,

60,000 pounds at 25 ft. radius.

When lifting loads of 50,000 pounds or more, the outriggers at the center of the car are used.

SPEEDS. Hoisting 80,000 pounds, 35 ft. per minute.

Rotating one complete revolution, 2 minutes.

Raising boom from a horizontal position to the position to lift the load at 20 ft. radius, 2 minutes.

MATERIALS OF CONSTRUCTION. All castings, except drums, engine cylinders, pistons, cross heads, cross head guides, crank discs and side frames, are of open-hearth steel. Iron castings are of best quality tough gray iron.

All ropes used are of the best quality plow steel hoisting rope, composed of six strands, nineteen wires to the strand, and having hemp centers.



40 TON STEAM WRECKING CRANE.

FACTORS OF SAFETY. The machinery and ropes in general are designed to have a factor of safety of five when the crane is lifting its maximum load. The structural parts are designed with a factor of safety of four, under extreme conditions.

CAR BODY. The car body is built up of six longitudinal stringers, each stringer being a 20 inch by 80 pound I-beam. The tops of the stringers are covered with half-inch plate extending the full width of the car. The bottom flanges of the I-beams are reinforced by heavy steel plates. To support the steel roller path in the center of the car, the stringers are connected by heavy cross girders riveted between the stringers.

At the point where the center pin connects the rotating bed to the car, the stringers are strongly reinforced, as also over the truck bolsters.

The ends of the stringers are connected together by heavy steel plates firmly attached to each stringer by connecting angles. The outriggers are supported by heavy steel plates extending between the stringers and riveted to them by connecting angles. Buffer blocks and couplers are bolted to the ends of the car.

In addition to the buffer blocks and couplers, chains are provided running from the end of the car to the boom of the crane, for holding it in position when traveling, also track clamps to fasten the car to the rails when standing idle, or to give some additional stability when hoisting light loads.

All wheels of the car are furnished with brakes operated from a hand wheel at the end of the car, in addition to the regular air brake equipment. The shaft which carries the hand wheel is made so that the wheel can be taken off when the car is in use, leaving the car clear for the crane to revolve.

TRUCKS. The wheels are our approved pattern, with steel tires, 33 inches in diameter. The axles are of hammered steel, $6\frac{7}{8}$ inches diameter, finished at the wheel seats and turned at the ends to form journals 6 inches in diameter by 10 inches long. The journal boxes, wedges, and brasses are the M. C. B. type. The truck bolster is built up of I-beams and plates of ample strength. The spring planks are heavy channels. The arch bars and pedestal tie-bars are of best quality of iron. The arch bars are reinforced between the truck columns, and wedges are provided, by the insertion of which the weight of the car body is taken off the bolster and thrown directly onto the diamond frames, to prevent oscillation due to the springs when the crane is in use lifting loads.

OUTRIGGERS. The outriggers at each end of car body consist of two 24 inch by 100 pound I-beams, 9 feet 6 inches long, which can be extended, one on each side of the crane, until the end of each I-beam is about 9 feet from the center line of crane on each side. The center outrigger is a beam built up of two I-beams with plates top and bottom. This beam is 18 feet long. Jack screws are provided to support the ends of these beams when extended.

ROLLER PATH. The roller path is a steel casting, 10 inches wide and 8 feet 6 inches outside diameter, having a turned conical surface for the rollers. On each side of this path are flanges for bolting the casting to the floor of the car.

Inside the roller path is a steel internal gear about 5 feet pitch diameter firmly bolted to the car body. With this gear meshes the rotating pinion that is carried by the rotating bed, the pinion being driven by the engines of the crane.

ROTATING BED. The rotating bed is a heavy steel casting bored at center for the

center pin and planed on the top for attachment to the frames that carry the mechanism. On the under side of this casting are pockets which contain the rollers on which the bed rests. The pins of these rollers are carried by the side walls of said pockets.

At the front end of the bed are pockets in which the ends of the boom rest. At the rear end of the bed are two projections to which are bolted channels extending the platform to carry the boiler, etc.

ROLLERS. The four rollers under the front end of the bed are 14 inches in diameter at the large end and $8\frac{1}{2}$ inches face. They are carried on $3\frac{1}{2}$ inch round steel pins. The four rollers under the back end of the bed are 10 inches diameter at large end and 5 inches face, and are carried on a $2\frac{1}{2}$ inch pin.

The rollers are of steel with planed treads and have hard brass bushings for the journals. The rollers are lubricated by means of compression grease cups, with holes drilled through the center of the pin, from which a passage leads to the bearing surfaces.

ENGINES. There are double engines having two cylinders, each 11 inches diameter by 8 inches stroke. Each cylinder with guide for the cross head is cast in one piece and bored at one operation, thus insuring perfect alignment. The cross heads are of cast iron, with large bearing surfaces to insure long use. The connecting rods are forged steel with solid heads and adjustable bronze bushings at the cross head pin, and marine type connection to the crank pin.

GENERAL. All details of workmanship and material are thoroughly first class and well adapted to the use for which they are designed.

HOISTING MECHANISM. The hoisting drum is 23 inches in diameter and of

cast iron. To this drum is keyed the gearing, which meshes with a pinion on the crank shaft of the engine. The brake ring for hoist drum is bolted to the arms of the gear, which are reinforced for the purpose. The hoisting pinion is connected to the crank shaft of the engine by an 18 inch friction clutch of improved type. The shaft on which the drum turns is extended at one end beyond the side frame and carries a winch head, or capstan, for general purposes.

BOOM-LOWERING DRUM. The boom-lowering drum is driven by a worm and wheel of such pitch and lead that the wheel will not, under ordinary circumstances, drive the worm, so that the drum is locked in any position. As an additional safeguard, a device is furnished for positively locking the worm shaft in position when the boom has reached the desired height. The worm wheel is of hard bronze. The worm is of tool steel. The teeth of both are accurately cut to the proper shape. The worm shaft is connected to the driving mechanism by a jaw clutch.

ROTATING GEAR. The rotating pinion that meshes with the rotating gear on the car body is driven through a worm and wheel of such pitch and lead that the wheel will not drive the worm. This suffices to hold the rotating bed in any position positively without the use of a brake. The worm shaft is connected to the driving shaft by means of bevel gears and two 14 inch friction clutches of an improved pattern. The crane can thus be rotated in either direction without regard to the direction in which the engine may be turning.

BOILERS. The boiler is vertical, 58 inches diameter by 6 feet 10 inches high, with 2 inch tubes each 3 feet long. All parts are of ample strength for a working pressure of 125 pounds of steam, and are made of the best quality of material. A full equipment of

fittings, gauge cocks, water glass, two pop safety valves, etc., are furnished with the boiler. A whistle and a full set of fire tools are also furnished. A water tank and coal bunker, each of about 30 cubic feet capacity, are placed one on either side of the crane. Boiler is covered with non-conducting material and jacketed with planished iron.

BOOM. The boom is built of two 15 inch by 80 pound I-beams, reinforced on top and bottom flanges with $\frac{3}{4}$ inch plates, and rigidly braced together by angle bracing on the center of the web.

HOIST BLOCK AND HOOK. The hoist block is built of steel plates rigidly riveted together. The four sheaves turn on a steel pin that passes through the side plates. The hook is forged of the best quality double refined iron, and is connected to the side plates of the block by a steel cross head in which the hook rotates.

SHEAVES. All sheaves are of the best quality of tough gray iron. The scores for the rope are turned. The sheaves turn on steel pins and are bronze bushed. Lubrication is provided by means of compression grease cups.

CAB. A neat cab, or canopy, with side and end curtains, is furnished to protect the operator and machinery from the weather.

LETTERING. Crane will be lettered and numbered to suit the purchaser.

WEIGHT AND MEASUREMENT. Gross weight, 160,000 lbs.; weight of heaviest piece, 32,000 lbs.; gross measurement, 2,958 cubic feet; measurement of largest piece, 594 cubic feet.

Five standard sizes of Steam Wrecking Cranes are built, as follows:

Capacity.	Gross Weight.	Code Word.	Price, F. O. B. Cleveland, Ohio.
15 Tons	65,000 lbs.	Geschertst	\$
20 Tons	80,000 "	Gescheurd	\$
25 Tons	125,000 "	Geschick	\$
40 Tons	160,000 "	Geschlafen	\$
50 Tons	170,000 "	Geschleift	\$



15 TON STEAM WRECKING CRANE WITH FIXED BOILER.

15 Ton Steam Wrecking Crane.

The picture on page 62 shows a Steam Wrecking Crane with stationary boiler mounted directly on carriage. The crane superstructure carries only the engines, drums and necessary counterweighting. The extreme radius described by rear overhang of superstructure is only 6 feet, so that crane can be operated without interruption while cars are standing or trains are passing on adjacent tracks.

CAPACITY. 30,000 pounds at 15 ft. radius, 15,000 pounds at 26 ft. radius.

CONSTRUCTION. The construction is similar to 40 ton Wrecking Crane already described.

Weight, 65,000 pounds.

Code Word, GESCHRAAGD.

Price, F. O. B. Cleveland, Ohio, \$

Partial List of Users of Brownhoist Locomotive and Wrecking Cranes.

CARNEGIE STEEL COMPANY, Pittsburg, Pa.	40 Cranes
CRAMP'S SHIPYARD, Philadelphia, Pa.	6 "
PENNSYLVANIA STEEL COMPANY, Steelton, Pa.	4 "
FORE RIVER ENGINE COMPANY, Quincy, Mass.	1 "
PENCOYD IRON WORKS, Philadelphia, Pa.	7 "
CENTRAL IRON AND STEEL COMPANY, Harrisburg, Pa.	2 "
POTTSTOWN IRON COMPANY, Pottstown, Pa.	3 "
LORAIN STEEL COMPANY, Lorain, Ohio, and Johnstown, Pa.	13 "
NATIONAL TUBE WORKS, McKeesport, Pa.	6 "
ILLINOIS STEEL COMPANY, Chicago, Ill.	3 "
ALABAMA STEEL AND SHIPBUILDING COMPANY, Birmingham, Ala.	1 "
BETHLEHEM STEEL COMPANY, Bethlehem, Pa.	3 "
LOUISVILLE & NASHVILLE RAILROAD, Louisville, Ky.	5 "
PHOENIX IRON COMPANY, Phoenixville, Pa.	4 "
A. CARPENTER, San Francisco, Cal.	3 "
CAMBRIA IRON COMPANY, Johnstown, Pa.	2 "
ILLINOIS CENTRAL RAILROAD, Chicago, Ill.	3 "
WM. WHARTON, Jr., & CO., Philadelphia, Pa.	2 "
RIVERSIDE IRON WORKS, Wheeling, W. Va.	2 "
NEWPORT NEWS SHIPBUILDING AND DRY DOCK COMPANY, Newport News, Va.	3 "
J. JACOB SHANNON, Philadelphia, Pa.	2 "
TROY STEEL PRODUCTS CO., Troy, N. Y.	2 "
GENERAL ELECTRIC CO., Schenectady, N. Y.	2 "
McCLINTIC MARSHALL CONSTRUCTION CO., Rankin, Pa.	2 "
SHARON STEEL CO., Sharon, Pa.	2 "
YOUNGSTOWN STEEL CO., Youngstown, Ohio	2 "
CIE DE BOLEO, Guaymas, Mexico	2 "
COMPANIA DEL FERROCARRIL DE MERIDE A VALLADOLID, Progreso, Yucatan	2 "

The Brown Hoisting Machinery Company, Incorporated.

Electric Traveling Cranes.

NOTE: See additional Code Words on page 255.

Electric Traveling Cranes.

All inquiries and orders for Electric Traveling Cranes should state the following particulars:

1. Maximum load and average load to be lifted, and how often.
2. Span: Distance center to center of rails on which crane runs.
3. Height: Floor to top of rail on which crane runs.
4. Height: Floor to underside of roof trusses in clear.
5. Clearance: Side of building to center of rail on which crane runs.
6. Length of travel: End to end of crane runway.
7. State if one or two lifting trolleys are wanted.
8. State if Auxiliary Hoist is wanted, and capacity of same.
9. Give description of work crane is to perform, and state if inside a building or outdoor service.
10. State if expert is wanted to erect crane.
11. State voltage of electric current.
12. State speeds, if any preference (otherwise our standard speeds will be given).
13. Give location of operator's cage, if any preference.
14. State Crane Catalog, 1903 Edition, if reference is made to pages in this book.

3 Motor Electric Traveling Crane.

BRIDGE is of improved construction, and consists of two riveted steel plate girders, supported at each end by heavy steel truck frames carrying the truck wheels. Each girder is provided with a system of auxiliary trusses, which give maximum lateral stiffness with minimum dead weight.

BRIDGE TRAVEL is effected by an electric motor placed on the bridge, generally near the center of the span, driving a shaft extending across the bridge, which is connected by gearing with one truck wheel at each end of the bridge. This shaft is of such size and stiffness as to always provide, in connection with liberal wheel base, for the maintenance of the crane in proper position on its tracks. Bridge travel gear is provided with a foot brake for quickly checking speed of bridge.

TROLLEY consists of a built-up steel, or cast steel and iron frame, carrying all the mechanism for hoisting and trolley traveling, and motors for same.

TRUCK WHEELS. All truck wheels have chilled treads, ground true, and are keyed to the axles; the axles run in bronze half bushings, having large wearing surfaces, which are easily removable without taking out wheels or axles, and which are provided with oil reservoirs, always insuring thorough lubrication.

HOISTING AND LOWERING are effected by an electric motor attached to and carried on the trolley, which drives, through a train of spur gearing, a double grooved hoisting drum of sufficient size to receive the entire length of hoisting chain or wire rope in a single wrap.

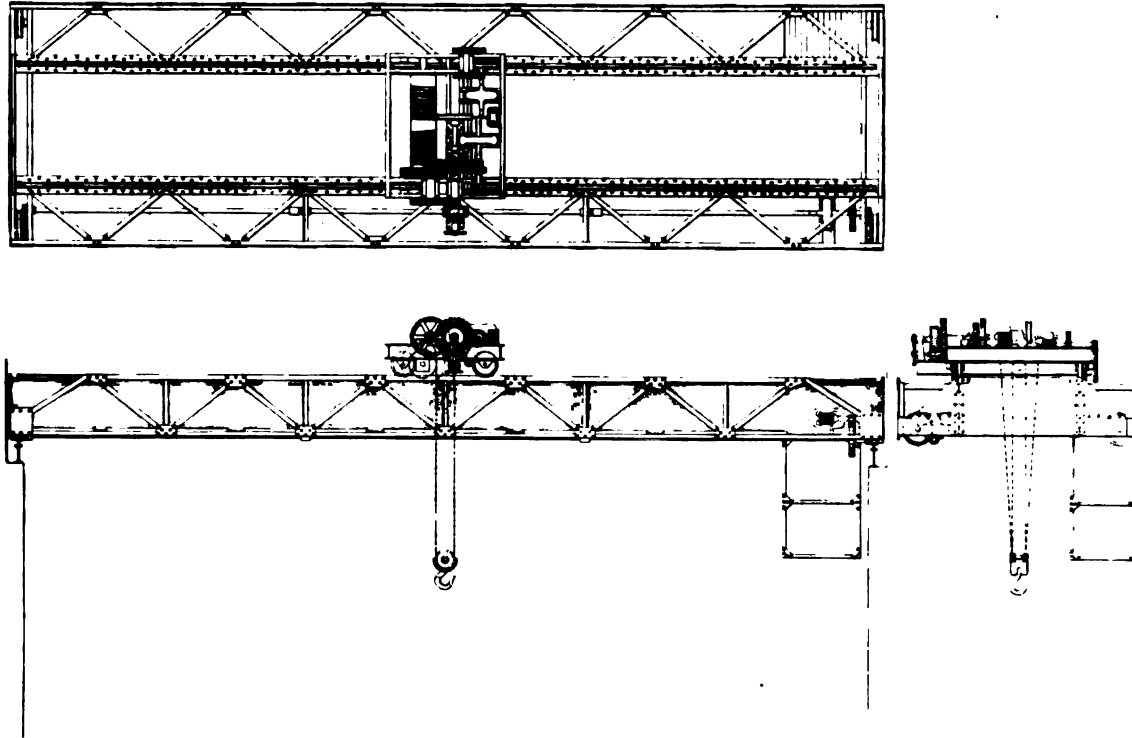
The load is usually suspended on four parts of chain or wire rope, so that hoisting is effected by winding two of these parts, thus permitting the load to hoist or lower only in a plumb line. The lowering mechanism is provided with two automatic safety brakes, viz.:

A. AN AUTOMATIC SAFETY MECHANICAL BRAKE, which controls the load at all times, under all conditions, and prevents the possibility of its running down. By reversing the motion of the motor, lowering is effected through this brake with smoothness and perfect safety. This brake is checked by a positive pawl or detent, the construction of which is such that while positive in action it is noiseless.

B. AN AUTOMATIC ELECTRICALLY OPERATED BRAKE, so arranged in the electric circuit that when the load is being hoisted or lowered the brake is off, but will be automatically applied when either motion ceases or the current is interrupted. The purpose of this brake is to check the momentum of the armature and high speed parts of the mechanism and bring them promptly but quietly to rest.

ELECTRIC MOTORS. The motors are designed with special reference to crane service, are series wound, and will stand the severe requirements imposed upon them with scarcely an appreciable rise in temperature. Their mechanical construction is such as will show no signs of weakness or wear beyond that to be expected in service from any well-designed piece of mechanism.

CONTROLLERS. The controllers are also specially designed for crane service; are made with an unusually large carrying capacity, and will do the work for which they are designed easily and in a most satisfactory manner.



STANDARD 3 MOTOR ELECTRIC TRAVELING CRANE.

Plan, Side and End Elevation.

Code Word, complete Crane, **HEXAGYNO.**

OPERATING PLATFORM is usually attached to the bridge underneath and at one end in such a way as not to interfere with hook travel, and is made of ample size to contain all appliances for controlling the direction and speeds of the motors and to afford ample room for the operator.

GEARING. All gear wheels are of ample strength, usually of steel castings accurately laid out, smooth and well fitted; all high speed gears are cut; all pinions of less than twenty teeth are of forged steel.

ELECTRICAL WORK is of highest class, and unless otherwise specified is designed for a current of 220 volts.

SIZES. From one ton upward; plans and specifications submitted for any service and capacity required.

ELECTRIC TRAVELING CRANES are adapted for every class of work where current is available, and where suitable tracks can be erected. This form of crane is pre-eminently the Modern Power Traveling Crane.

Special Modifications.

AUXILIARY HOIST. We sometimes furnish, where required by the nature of the service or where desired by the customer, auxiliary hoisting mechanism on the trolley for obtaining very high speeds for light loads, the main hoisting mechanism being used for the heavier loads. The capacity of this auxiliary hoist is generally about one-fourth to one-third the maximum capacity of the crane.



10 TON TROLLEY FOR 3 MOTOR ELECTRIC TRAVELING CRANE.

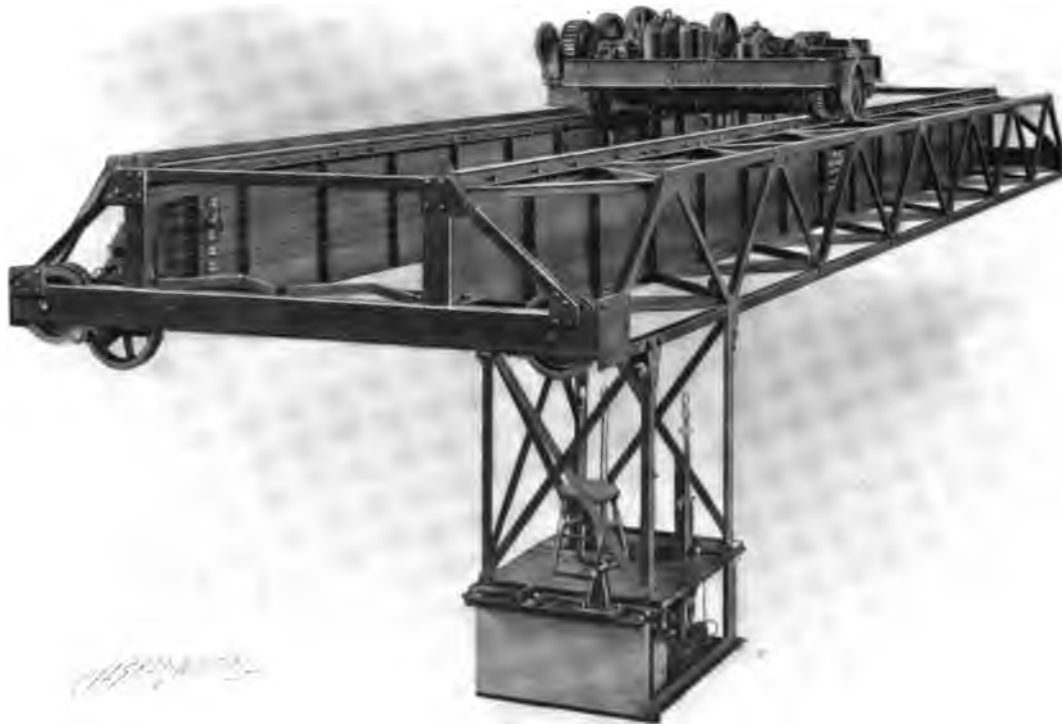
With Cast Steel and Iron Side and End Frames.
Showing Motors, Gearing, and Safety Lowering Device.

Code Word for Trolley, GEWED

TWO-TROLLEY CRANES. We also furnish cranes having two trolleys, each trolley having complete hoisting and trolley traveling mechanism. This is a very convenient form for certain conditions.

SPECIAL TYPES. There are many kinds of service requiring special consideration in determining what design of crane would be most efficient and desirable. We are prepared to furnish plans and estimates for any case that may arise, and always endeavor to give the customer the benefit of our experience in arriving at an accurate conclusion as to the type of crane best adapted to his requirements.

CURVED LOWER CHORD. We can furnish bridge with curved lower chord girders at an extra cost.



STANDARD 3 MOTOR ELECTRIC TRAVELING CRANE.

Code Word, HEXAGYNO.



6 TON STANDARD 3 MOTOR ELECTRIC TRAVELING CRANE, 50 FT. SPAN.

Pencoyd Iron Works, Philadelphia, Pa.

Outdoor service, loading cars, etc.



STANDARD 3 MOTOR ELECTRIC TRAVELING CRANES.

Carnegie Steel Company, Limited, Homestead Steel Works, Pittsburg, Pa., showing a group of seven 10-ton Cranes handling structural material, loading cars, etc., outdoor service.



25 TON 3 MOTOR ELECTRIC TRAVELING CRANE, 50 FT. SPAN.

Wire Rope for Hoisting instead of Chain.



15 TON STANDARD 3 MOTOR ELECTRIC TRAVELING CRANE, 51 FT. SPAN.

The Lorain Steel Company Lorain Ohio.



10 TON STANDARD 3 MOTOR ELECTRIC TRAVELING CRANE, 50 FT. SPAN.

Running on Circular Runway.

Carnegie Steel Company, Limited, Homestead Steel Works, Pittsburg, Pa.



40 TON LADLE CRANE, 42 FT. 9 IN. SPAN.
Tennessee Coal, Iron and Railway Co., Ensley, Ala.



5 TON INGOT CRANE.

Tennessee Coal, Iron and Railway Co., Ensley, Ala



20 TON STANDARD 3 MOTOR ELECTRIC TRAVELING CRANE, 40 FT. SPAN.

Curved Lower Chord Girders.

Henry R. Worthington Hydraulic Works, Brooklyn, N. Y.

Partial List of Users of Electric Traveling Cranes

CARNEGIE STEEL COMPANY, Pittsburg, Pa.	17	Cranes
PENCOYD IRON WORKS, Philadelphia, Pa.	13	"
WM. WHARTON, JR., & COMPANY, Philadelphia, Pa.	2	"
OTIS STEEL COMPANY, Cleveland, Ohio	1	"
ALABAMA STEEL AND SHIPBUILDING COMPANY, Birmingham, Ala.	1	"
HENRY R. WORTHINGTON, Brooklyn, N. Y.	2	"
PENNSYLVANIA SALT MANUFACTURING COMPANY, Philadelphia, Pa.	2	"
GENERAL ELECTRIC COMPANY, Schenectady, N. Y.	2	"
CLEVELAND ELECTRIC RAILWAY COMPANY, Cleveland, Ohio	1	"
FEDERAL STEEL COMPANY, Lorain, Ohio	2	"
CHICAGO SHIPBUILDING COMPANY, Chicago, Ill.	2	"
ACME MACHINERY COMPANY, Cleveland, Ohio	1	"
RAND DRILL COMPANY, Tarrytown, N. Y.	1	"
SALEM IRON COMPANY, Leetonia, Ohio	1	"
BATES MACHINE COMPANY, Joliet, Ill.	1	"
DETROIT IRON AND STEEL COMPANY, Detroit, Mich.	1	"
WESTINGHOUSE ELECTRIC AND MANUFACTURING COMPANY, Pittsburg, Pa.	4	"
BUFFALO AND SUSQUEHANNA IRON COMPANY, Buffalo, N. Y.	1	"
MARYLAND STEEL COMPANY, Baltimore, Md.	2	"
TENNESSEE COAL, IRON AND RAILWAY COMPANY, Ensley, Ala.	1	"
WESTERN ELECTRIC COMPANY, Chicago, Ill.	1	"
IROQUOIS IRON COMPANY, Chicago, Ill.	1	"
ALPINE MONTANGESELLSCHAFT, Vienna, Austria	4	"
LA CAPITAL TRAMWAYS COMPANY, Buenos Ayres, South America	4	"
DOMINION IRON AND STEEL CO., Sydney, C. B.	2	"

The Brown Hoisting Machinery Company, Incorporated.

High Speed Balanced Cantilever Cranes.

Brown's Patent.

NOTE: See additional Code Words on page 255.

Cantilever Cranes.

All inquiries and orders for Cantilever Cranes should state the following particulars:

1. Maximum load and average load to be lifted.
2. Span, or length of crane. Give size or plan of space into which crane is to go (from which we can determine the span or length of crane).
3. Height in clear at which hook is to lift load (from which we can determine height of crane).
4. Length of runway.
5. Give description of work to be done by crane.
6. Quantity of material to be handled in any given time.
7. State any special conditions affecting in any way the work, if any exist.
8. State if steam or electric driving machinery is wanted, and if the latter, the voltage.
9. State Crane Catalog, 1903 Edition, if reference is made to pages in this book.

NOTE: We always erect these cranes and deliver them in running order.

High Speed Cantilever Cranes. Brown's Patent.

The Cantilever Cranes shown in the following pictures were designed and patented by Mr. Alexander E. Brown, Vice President and General Manager of the Brown Hoisting Machinery Co., and all the cranes of this type in successful operation in this country and in Europe were built by us.

These cranes embody entirely new features in crane construction, which allow the long spans and high speeds for which they are designed and equipped.

IN THESE CANTILEVER CRANES the girders or bridge trusses are of our patent construction, invented and designed to give the maximum strength with the minimum weight of material, and all the members made of such shapes and so arranged in the trusses as to expose the least possible surface to wind pressure. This question of wind pressure is of the greatest importance in the exposed locations where these cranes are generally used.

One pair of engines or an electric motor, with three drums, operated through special friction clutches, and controlled by a single operator, drives all three functions of the crane. No dead weight (motors or machinery) is carried on either the bridge or trolley as in other power cranes. This allows the lightest form of bridge construction and very quick movement of trolley, and especially permits the trolley to be started, run at full speed, or stopped instantly, WHICH CANNOT BE DONE WITH THE ORDINARY TYPE OF TROLLEY, having a dead weight of several tons of motors and machinery.

THESE CANTILEVER CRANES have an automatic counterweight running on a track along the bridge and above the hoisting trolley, and connected by ropes to the latter so that whatever the position of the hoisting trolley on one arm of the crane, the counterweight at all times automatically occupies a similar position on the other arm. This counterweight for extra heavy loads is capable of further manipulation by the operator, in order to obtain a double purchase.

OUR CANTILEVER CRANE is the ONLY SUCCESSFUL SHIPBUILDING CRANE IN THE WORLD.

These cranes can be modified to meet almost any requirements and conditions.



15 TON BROWN PATENT ELECTRIC BALANCED CANTILEVER SHIPBUILDING CRANE, 187 FT. LONG.

The Newport News Shipbuilding and Dry Dock Company, Newport News, Va.
The Wm. Cramp & Sons Ship and Engine Building Co., Philadelphia, Pa. (Three similar Cranes.)

Length of runway, 725 ft. Height under boom, 100 ft. Working loads: 9,000 lbs. 89 ft. from center, or 28,000 lbs. 55 ft. from center. Speeds: Trolley, any speed desired; Crane on runway, 750 feet per minute with 9,000 lbs. 89 ft. from center, and 690 ft. per minute with 28,000 lbs. 55 ft. from center; Hoisting, full load 200 ft. per minute, and empty hook 400 ft. per minute.

Code Word, HAUPTZWECK.

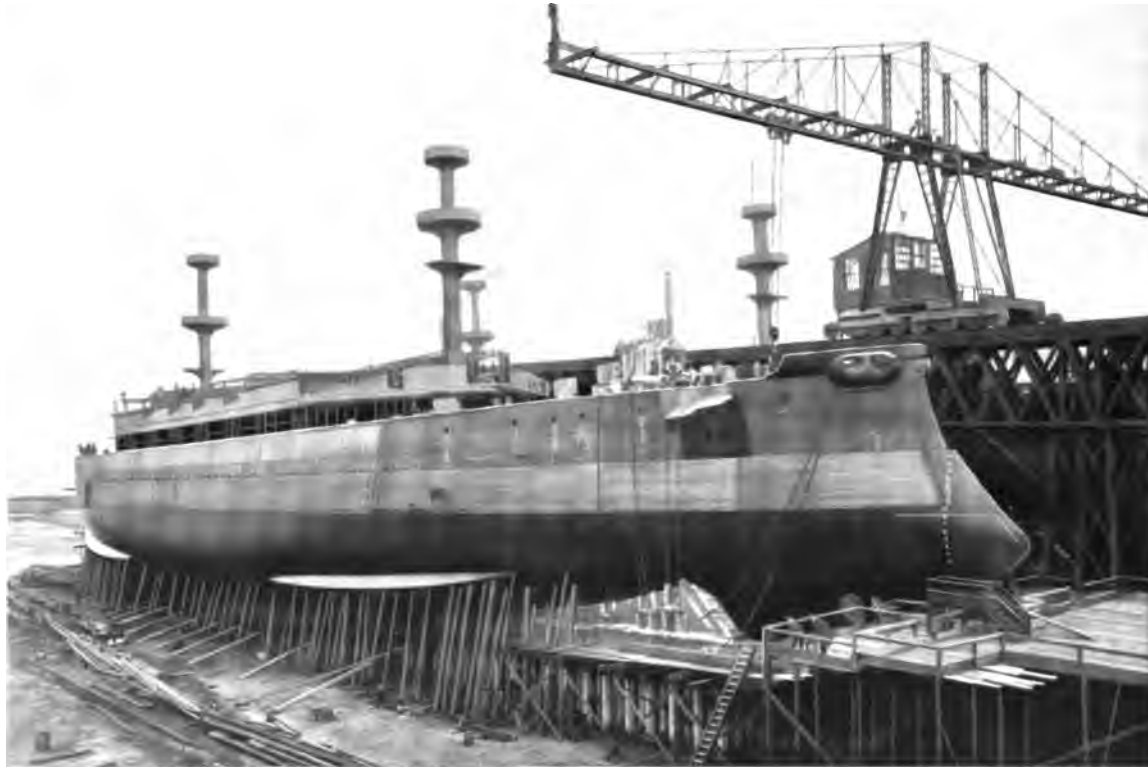


BROWN PATENT ELECTRIC BALANCED CANTILEVER SHIPBUILDING CRANE.

The Newport News Shipbuilding and Dry Dock Company, Newport News, Va.

Showing U. S. Battleship "Kearsarge" during construction.

The Newport News Company have four of these Cranes in use.



BROWN PATENT ELECTRIC BALANCED CANTILEVER SHIPBUILDING CRANE.

The Newport News Shipbuilding and Dry Dock Company, Newport News, Va.

U. S. Battleships "Kearsarge" and "Kentucky" before launching.

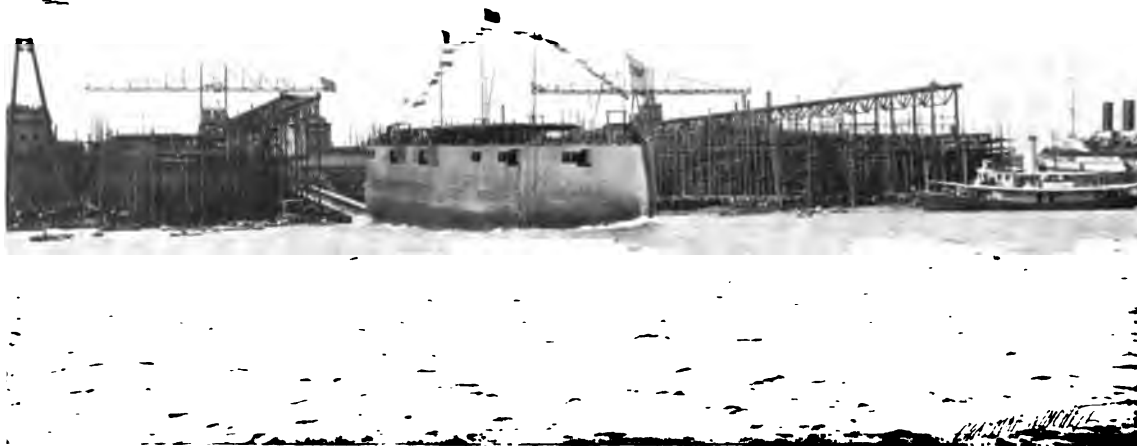


From Photo. Copyright 1898 by Wm. H. Rau, Philadelphia.

BROWN PATENT ELECTRIC BALANCED CANTILEVER SHIPBUILDING CRANE.

The Newport News Shipbuilding and Dry Dock Company, Newport News, Va.

Launching of U. S. Battleship "Kearsarge."



BROWN PATENT ELECTRIC BALANCED CANTILEVER SHIPBUILDING CRANE.

The Wm. Cramp & Sons Ship and Engine Building Co., Philadelphia, Pa.

Launching of I. R. N. Battleship "Retvizan."



5 TON BROWN PATENT BALANCED CANTILEVER YARD CRANE, 353 FT. LONG.

Solvay Process Co., Detroit, Mich
The Bethlehem Steel Co., South Bethlehem, Pa., similar Crane.
Speeds same as page 93.
Code Word for Crane, **HARNSTOFF.**



5 TON BROWN PATENT STEAM BALANCED CANTILEVER YARD CRANE, 325 FT. LONG.

Height under girder, 58 ft. Wheel base, 37 ft.

In use at our works, Cleveland, Ohio, for handling and storing structural and other material.

Speeds: Trolley, 1,000 ft. per minute. Hoisting full load, 100 ft. per minute. Entire crane along runway, 250 ft. per minute.

Code Word for Crane, **HARNSTOFF.**



5 TON BROWN PATENT BALANCED REVOLVING CANTILEVER CRANE, 353 FT. LONG.

Punxsutawney Iron and Steel Company, Punxsutawney, Pa.
Handling pig iron, ore and coal.



10 TON BROWN PATENT BALANCED CANTILEVER LOCOMOTIVE CRANE, 65 FT. RADIUS.

The Newport News Shipbuilding and Dry Dock Co. Newport News, Va.

Handling ship plates, unloading cars, and general yard service.

Partial List of Users of Cantilever Cranes.

THE NEWPORT NEWS SHIPBUILDING AND DRY DOCK COMPANY, Newport News, Va.	5	Cranes
THE WM. CRAMP SHIP AND ENGINE BUILDING COMPANY, Philadelphia, Pa.	3	"
CHICAGO MAIN DRAINAGE CANAL, Chicago, Ill.	11	"
SOLVAY PROCESS COMPANY, Detroit, Mich., and Syracuse, N. Y.	3	"
PUNXSUTAWNEY IRON AND STEEL COMPANY, Punxsutawney, Pa.	1	"
BETHLEHEM STEEL COMPANY, Bethlehem, Pa.	1	"
CHICAGO SHIPBUILDING COMPANY, Chicago, Ill.	2	"
SHARON STEEL COMPANY, Sharon, Pa.	1	"
F. W. WHEELER & CO., Bay City, Mich.	2	"
U. S. GOVERNMENT, Brooklyn Navy Yard	1	"
ALPINE MONTANGESELLSCHAFT, Vienna, Austria	1	"
SOCIÉTÉ ANONYME DES HAUTS-FOURNEAUX DE DIFFERDANGE, Luxemburg, Germany	1	"
AACHENER HUETTEN ACTIEN VEREIN, Rothe Erde, Germany	1	"
SOCIÉTÉ ANONYME D'OUGREE, Liege, Belgium	1	"
EISEN UND STAHLWERK HOESCH, JETZT ACTIEN GESELLSCHAFT, Dortmund, Germany	1	"
VICKERS SONS & MAXIM, Ltd., Barrow-in-Furness, England	4	"
ROBERT STEVENSON & CO., Ltd., Newcastle-on-Tyne, England	2	"
STABILIMENTO TECNICO TRIESTINO, Trieste, Austria	1	"
NETTLEFOLDS, LTD., Nettlefolds, Wales	1	"
WITKOWITZER BERGBAU, Lulea, Sweden	1	"

The Brown Hoisting Machinery Company, Incorporated.

High Speed Gantry Cranes.

Brown's Patent.

NOTE: See additional Code Words on page 255.

Gantry Cranes.

All inquiries and orders for Gantry Cranes should state the following particulars:

1. Maximum load and average load to be lifted.
2. Span of crane. Also give size or plan of space into which crane is to go (from which we can determine the length of crane).
3. Height in clear at which hook is to lift load (from which we can determine height of crane).
4. Length of runway.
5. Give description of work to be done by crane.
6. Quantity of material to be handled in any given time.
7. State any special conditions affecting in any way the work, if any exist.
8. State if steam or electric driving machinery is wanted, and if the latter, the voltage.
9. State Crane Catalog, 1903 Edition, if reference is made to pages in this book.

NOTE: We always erect these cranes and deliver them in running order.

High Speed Gantry Cranes. Brown's Patent.

The Gantry Cranes shown in the following pictures were designed and patented by Mr. Alexander E. Brown, Vice President and General Manager of the Brown Hoisting Machinery Co., and all the cranes of this type in successful operation in this country and in Europe were built by us.

These cranes embody entirely new features in crane construction which allow the long spans and high speeds for which they are designed and equipped. These cranes are so constructed that if the tracks upon which they run GET OUT OF PARALLEL, OR OUT OF LEVEL, as frequently happens, or if, by reason of SLIPPERY RAILS OR OTHER CAUSES, ONE END OF THE CRANE IS BEHIND OR AHEAD OF THE OTHER, THE CRANE CAN YET OPERATE SATISFACTORILY within reasonable limits until the trouble can be rectified. Heretofore it has been impossible to build Gantry Cranes of spans over 90 or 100 feet, because, owing to their rigid construction, they would soon tear themselves to pieces, for the reasons above mentioned. In our Gantry Cranes there is no attempt to connect the bridge to the legs rigidly. The bridge is pivotally connected to the pier at one end, and suspended from a ball and socket joint at the other.

IN THESE GANTRY CRANES the girders or bridge trusses are of our patent construction, invented and designed to give the maximum strength with the minimum weight of material, and all the members made of such shapes and so arranged in the trusses as to expose the least possible surface to wind pressure. This question of wind pressure is of the greatest importance in the exposed locations where these cranes are generally used.

One pair of engines or an electric motor, with three drums, operated through special friction clutches, and controlled by a single operator, drives all three functions of the crane. No dead weight (motors or machinery) is carried on either the bridge or trolley, as in other power cranes. This allows the lightest form of bridge construction and very quick movement of trolley, and especially permits the trolley to be started, run at full speed, or stopped instantly, WHICH CANNOT BE DONE WITH THE ORDINARY TYPE OF TROLLEY, having a dead weight of several tons of motors and machinery.

We have Gantry Cranes in operation of 237 ft. span, both legs being operated by one source of power, with a bridge speed along surface tracks of 200 to 900 ft. per minute.

OUR GANTRY CRANES make a PERFECT MACHINE FOR BEAM AND STRUCTURAL YARDS, as well as for many other uses.

Can be modified to meet almost any requirements and conditions.



5 TON BROWN, PATENT ELECTRIC GANTRY CRANE, 168 FT. SPAN.

Pennsylvania Steel Co., Steelton, Pa.

Speeds: Hoisting, full load, 200 ft. per minute. Trolley, 1,000 feet per minute. Crane along runway, 400 ft. per minute.



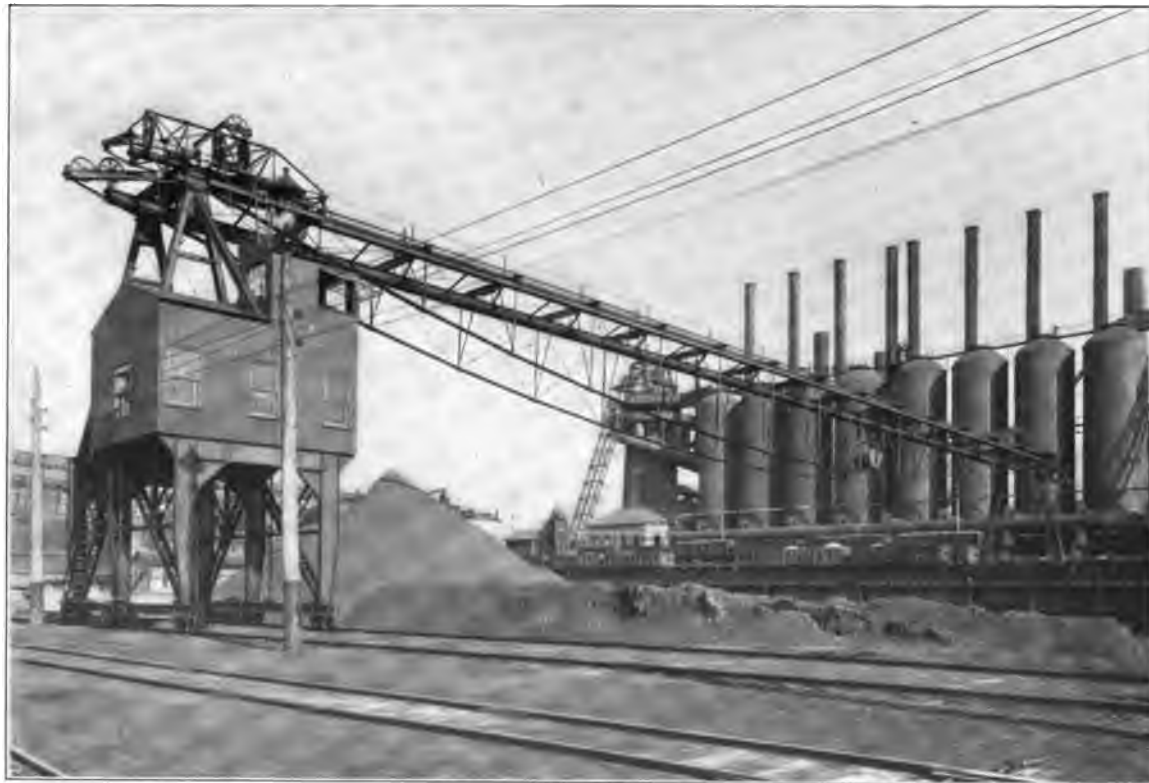
3 1-2 TON BROWN PATENT STEAM GANTRY YARD CRANE, 187 FT. SPAN.

Handling switches and rails and laying down special track work.

Lorain Steel Co., Johnstown, Pa.

Speeds: Hoisting, 150 ft. per minute. Trolley, 1,000 ft. per minute. Entire crane on runway, 900 ft. per minute.

Code Word for Crane, GURGELROHR.



5 TON BROWN PATENT GANTRY CRANE, 233 FT. SPAN.

Handling iron ore.

Carnegie Steel Co., Limited, Duquesne Furnace, Pittsburg, Pa. There are four of these machines at this plant.



7 TON BROWN PATENT ELECTRIC GANTRY SHIPBUILDING CRANE, 58 FT. SPAN.

Cantilever extension beyond pier, 14 ft. Cleveland Shipbuilding Co., Lorain, Ohio.

Speeds: Hoisting full load, 30 ft. per minute. Trolley, 250 ft. per minute. Crane along runway, with full load, 400 ft. per minute. The span of this Crane can be reduced by 2 ft. units by moving in the single pier and track on which it travels.

Code Word for Crane, GUMMI.



5 TON BROWN PATENT STEAM GANTRY CRANE, WITH HINGED APRON EXTENSION OVER VESSELS OF 36 FT.

Very High Speeds.

Pennsylvania Railroad, Pier J, Jersey City, N. J., for handling general merchandise, etc., from vessel to cars and *vice versa*.

Length of pier, 1,000 ft. Width, 35 ft. Crane straddles two tracks, with a third track outside of legs, to allow handling of long material, such as rails, lumber, etc. All operating machinery is mounted in house on machine, and takes up no pier space.

Code Word for Crane, GETHOLIAS.



TWO 3 TON GANTRY CRANES, PIER G, PORT RICHMOND, PHILADELPHIA, PA.

Philadelphia & Reading Railway.



4 TON STEAM GANTRY CRANE, 244 FT. SPAN.
Alpine Montangesellschaft, Donawitz, Austria.

Partial List of Users of Gantry Cranes.

CARNEGIE STEEL COMPANY, Pittsburg, Pa.	4	Cranes
PENNSYLVANIA STEEL CO., Steelton, Pa.	1	"
JOHNSON STEEL COMPANY, Johnstown, Pa.	1	"
CHICAGO SHIPBUILDING CO., Chicago, Ill.	1	"
F. W. WHEELER & CO., Bay City, Mich.	1	"
CLEVELAND SHIPBUILDING COMPANY, Cleveland, Ohio	2	"
FRIED. KRUPP, Rheinhausen, Prussia	3	"
KRAINISCHE INDUSTRIE GESELLSCHAFT, Trieste, Austria	3	"
PROVIDENCE RUSSE, Mariupol, Russia	3	"
ALPINE MONTANGESELLSCHAFT, Vienna, Austria	2	"
MALMO HARBOR COMMISSION, Malmo, Sweden	2	"
GRAHAM BROS., Gothenburg, Sweden	1	"
KIUSHIU RAILWAY, Moji, Japan	2	"
QUEENSLAND GOVERNMENT RAILWAYS, Brisbane, Australia	1	"

The Brown Hoisting Machinery Company, Incorporated.

Hand Traveling Cranes.

NOTE: See additional Code Words on page 255.

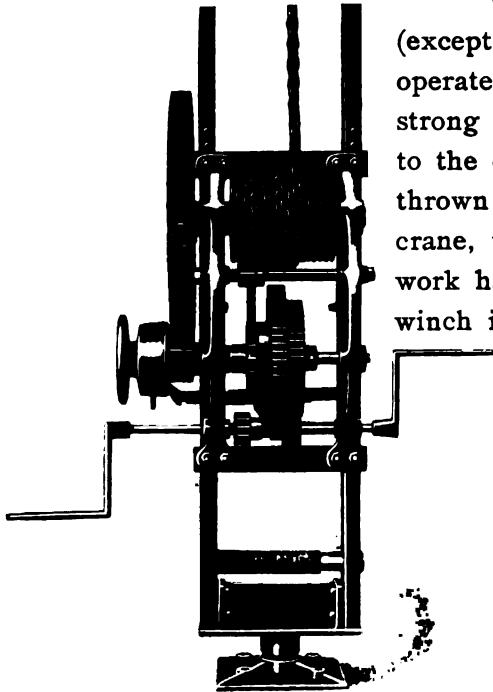
Hand Traveling Cranes.

All inquiries and orders for Hand Traveling Cranes should give the following particulars:

1. Capacity, in pounds to be lifted; state maximum and average loads and how often lifted.
2. Span: Center to center of rails.
3. Height: Floor to top of runway rails.
4. Height: Floor to ceiling in clear.
5. End clearance: Center of runway rails to side of building.
6. Service for which crane is wanted.
7. Preference as to type of crane herewith shown.
8. State Crane Catalog, 1903 Edition, if reference is made to pages in this book.

Hand Cranes.

Description of Winches, Safety Lowering Mechanism, etc.



Crane Winch.

WINCH. On all our hand power cranes up to 10 tons capacity (except pulley block cranes), the hoisting mechanism consists of a winch, operated by hand cranks, as shown on this page. These winches are very strong and well built. They are self contained, and are securely bolted to the crane frame. Being self contained, the shafts and gears cannot be thrown out of alignment by any movement in the structural part of the crane, thereby causing the shafts and gears to bind and making the crane work hard. On the larger size cranes, from 10 to 25 tons capacity, the winch is divided, the drum and drum gear being built into independent side frames.

TWO SPEEDS OF HOIST. On all winches two speeds of hoist are provided. The change from fast to slow speed, or *vice versa*, is controlled by a shifting bar, the handle of which is conveniently placed for easy manipulation, and the construction is such that a change of speed can be safely made at any time, even while the load is suspended.

BARREL. The barrels have spiral grooves, and will take the entire length of chain or rope in a single wrap.

SAFETY LOWERING DEVICE. With this attachment, which operates automatically, the load is always self-sustained, and CANNOT RUN DOWN UNDER ANY CONDITION. The flying back of the handles is ABSOLUTELY PREVENTED, and the safety of the operator and of the load is always assured.

The load is lowered by simply turning the handles backward, or faster by using the dispatch lowering brake, which consists of alternate wood and metal surfaces, controlled by a hand wheel. When these discs are released by turning the hand wheel, the drum, drum gear and pinion with attached disc box rapidly revolve, the balance of the mechanism remaining at rest.

BEARINGS. All hand cranes are fitted with self-aligning roller bearings on truck wheels, which have in all cases inside and outside wearing surfaces of steel.

Pulley Block Cranes.

HOISTING MECHANISM. On all our Pulley Block Cranes the hoisting mechanism consists of a Yale-Weston Triplex Pulley Block, hung in, or built into the trolley, using the block shown in Fig. 1, page 113, for cranes up to and including 2 tons capacity, and either Fig. 2 or 3, same page, for cranes of from 3 to 10 tons capacity.

For Pulley Block Cranes of from 12 tons to 20 tons, we use the block shown in Fig. 4, page 113, and above this capacity, two trolleys to each crane are provided, each having its separate hoisting block, the two blocks being used together on the heavier loads, while a single trolley is used for the lighter loads.

THE TRIPLEX BLOCK obtains its power through a balanced train of spur gearing, and hence has a higher mechanical efficiency than any other similar device ever invented. A man can do more work with it than with any other block, and do it more easily. Where the use is frequent and the conditions reasonable, this is the best, and ultimately the most economical, of all portable hoists.

We can, however, furnish Pulley Block Cranes without hoisting blocks if requested.



Fig. 1



Fig. 2



Fig. 3



Fig. 4

THE YALE-WESTON TRIPLEX BLOCKS.

Hand Traveling Crane, Pendent Winch Type.

BRIDGE. Of steel, I-beam or girder construction.

HOISTING GEAR. Consists of a Standard Crane Winch (see page 111).

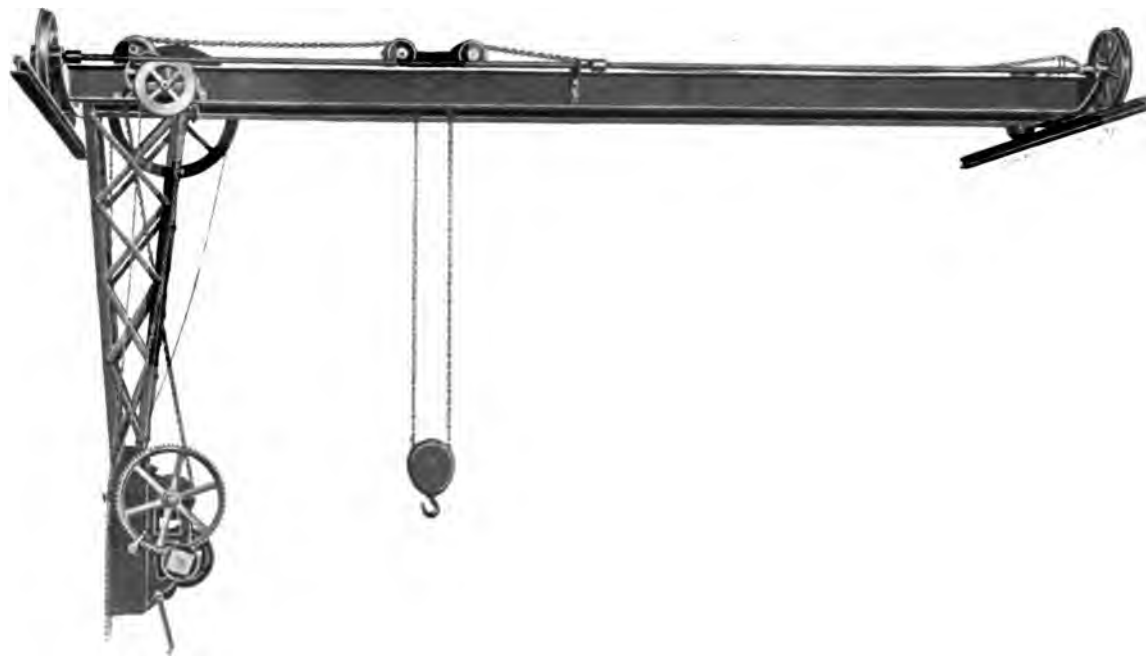
TROLLEY TRAVEL. Effected by pendent hand chain and sprocket wheel at one end of the bridge.

SPEEDS. Two speeds of hoist are provided (see page 111). On all cranes of five tons capacity and upward two speeds of trolley travel are provided.

BRIDGE TRAVEL. Effected by pushing or pulling on the pendent, which has ample lateral stiffness for this purpose, or by means of a transverse shaft across the bridge connected by gearing with one truck wheel at each end and driven by an endless hand chain passing over a sprocket wheel keyed on.

REGULAR SIZES. One to twenty tons.

SUITABLE. For use in foundries, machine and boiler shops, stone yards, etc., both for indoor and outdoor service.



HAND TRAVELING CRANE.

Pendent Winch Type.

Code Word for Crane, HERFSTMIS.

Hand Traveling Crane, Fixed Crab, with Elevated Platform.

BRIDGE. Of steel, I-beam or girder construction, carrying elevated platform for operator.

HOISTING GEAR. Consists of a Standard Crane Winch. (See page 111.)

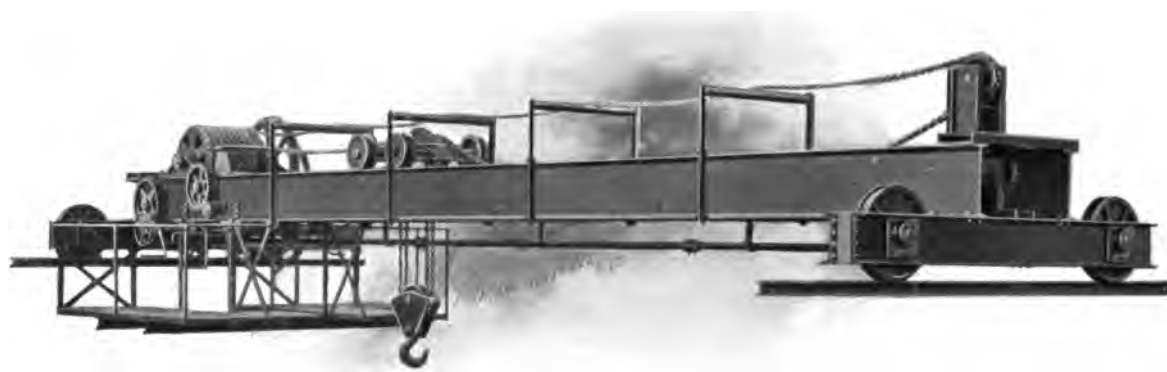
TROLLEY TRAVEL. Effected by hand cranks conveniently placed for operating from the platform.

BRIDGE TRAVEL. Effected by hand cranks driving a train of gears connected with a transverse shaft across the bridge which gears into one truck wheel at each end of the bridge.

SPEEDS. Two speeds of hoist are provided, as explained on page 111. On all cranes of five tons capacity and upward, two speeds of trolley travel are provided.

REGULAR SIZES. One to thirty tons.

SUITABLE. For use in machine and boiler shops, foundries, stone yards, etc.



HAND TRAVELING CRANE.

Fixed Crab with Elevated Platform.

Code Word for Crane, **HERLAGERN.**

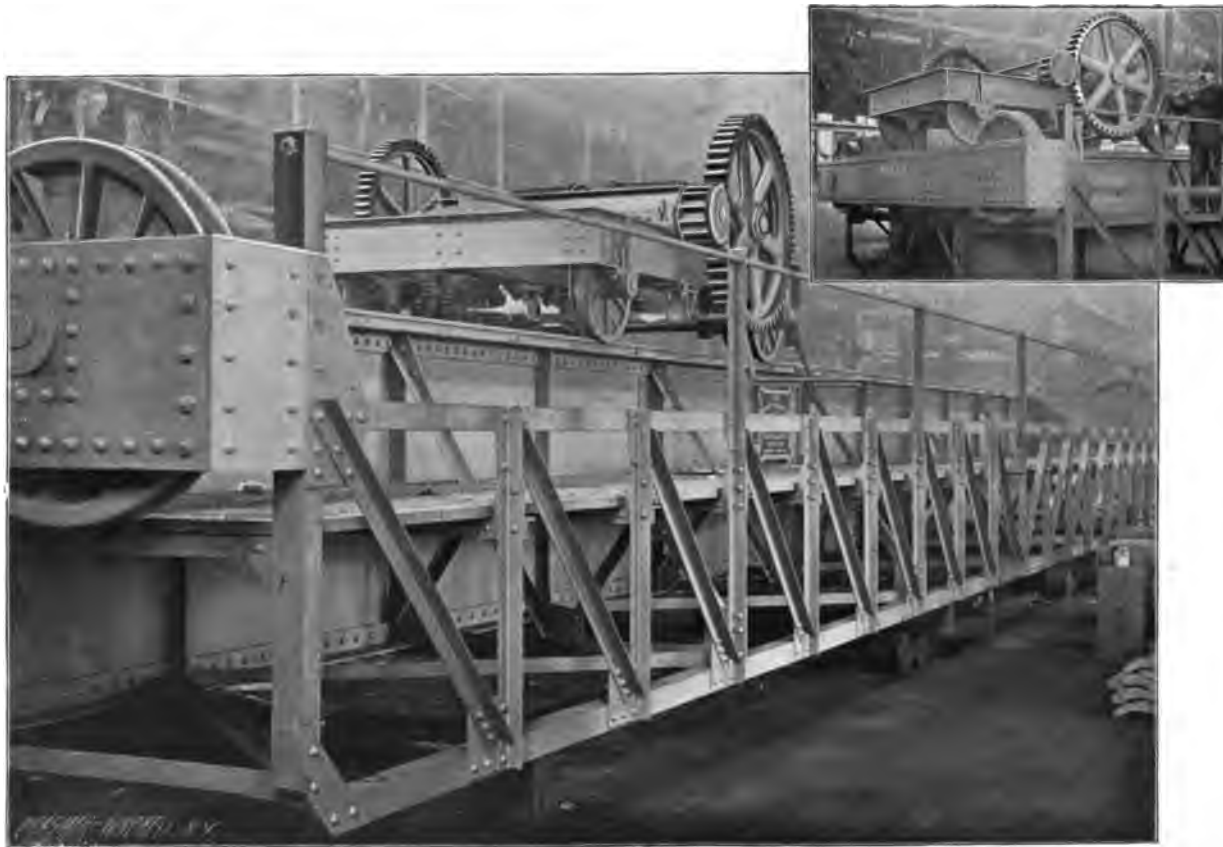


30 TON HAND TRAVELING CRANE, 60 FT. SPAN.

Fixed Crab with Elevated Platform, heavy pattern. Detroit Street Railway, Detroit, Mich.

Code Word for Crane, **HERLAGERN**

Code Word for Curved Lower Chord, **GEWEHRLAUF.**



30 TON HAND TRAVELING CRANE, 60 FT. SPAN.

Trolley Crab Type. Platform entire length of bridge. Metropolitan Street Railway, Kansas City, Mo.
Code Word for Crane, **HERMONTHIS.**

Hand Traveling Crane, Fixed Crab, with Pendent Hand Chains.

BRIDGE. Of steel, I-beam or girder construction.

HOISTING GEAR. Consists of a Standard Crane Winch. (See page 111.)

TROLLEY TRAVEL. Is effected by pulling on a pendent hand chain suspended from a sprocket wheel at one end of the bridge.

BRIDGE TRAVEL. Is effected by pulling on a pendent hand chain passing over a sprocket wheel which is keyed to a transverse shaft extending across the bridge and connected by gearing with one truck wheel at each end of the bridge.

SPEEDS. Two speeds of hoist are provided, as explained on page 111, and on cranes of five tons capacity and upward two speeds of trolley travel are provided.

REGULAR SIZES. One to six tons.

SUITABLE FOR USE. In machine and boiler shops, foundries, stone yards, etc., or in any case where it is desirable to have all of the operations performed at one end of the bridge, but where it is not possible to have a pendent winch, and not desirable for the operator to ride with the crane.



HAND TRAVELING CRANE.

Fixed Crab, with Pendent Hand Chains.

Code Word for Crane, **HEROPENDE.**

Hand Traveling Crane, Pulley Block Type.

BRIDGE. Of steel, I-beam or girder construction.

TROLLEY. Built-up steel frame, containing Weston Triplex Pulley Block, giving the highest efficiency in hoisting and sustaining the load safely at any point. (See page 112.)

HOISTING AND LOWERING. Effected by hand chain.

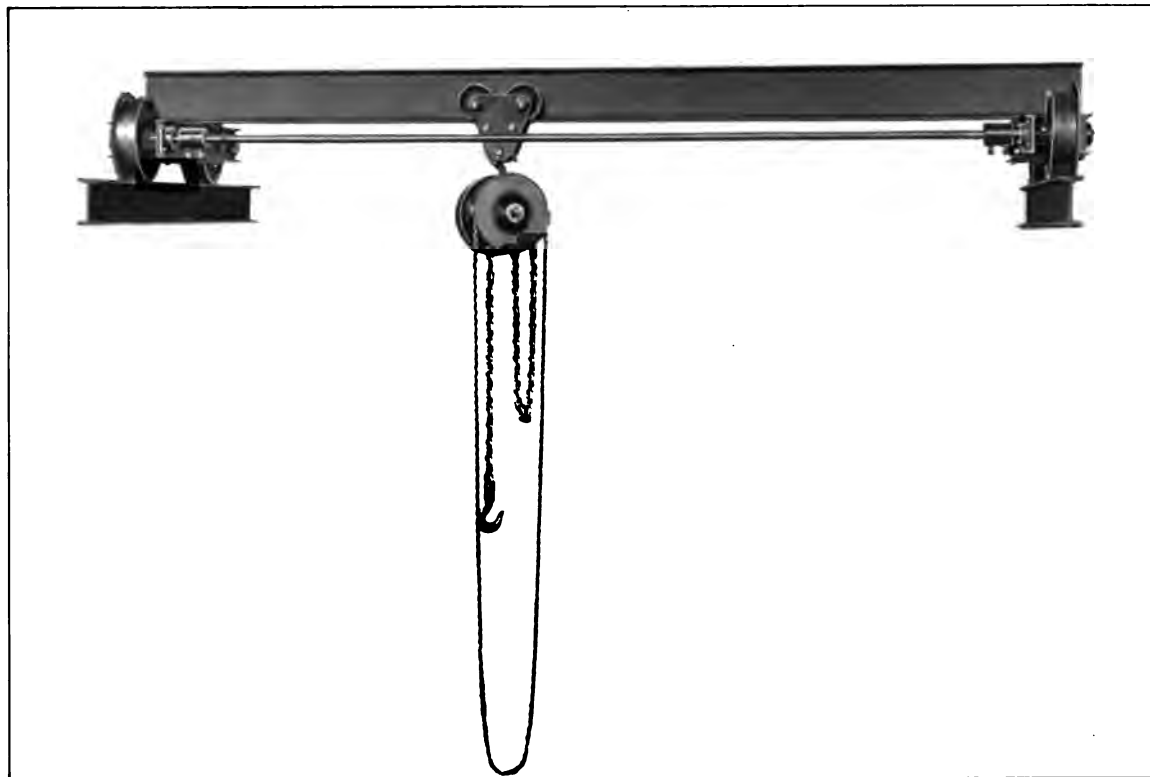
SQUARING OF BRIDGE. Maintained by traveling shaft of ample stiffness and liberal wheel base.

TROLLEY TRAVEL. Effected by sprocket wheel with pendent hand chain suspended from the trolley. For cranes of two tons capacity and under, travel is usually effected by pushing on or pulling the load.

BRIDGE TRAVEL. Effected by hand chain operating the traveling shaft, which is connected by gearing to one truck wheel at each end of the bridge. For cranes of two tons capacity and under, travel is usually effected by pushing on or pulling the load.

REGULAR SIZES. One to forty tons.

ADAPTED. For use in electric and cable power houses, engine rooms, machine and erecting shops and for general hoisting service, but not for foundry service, except with extended frame (page 130).



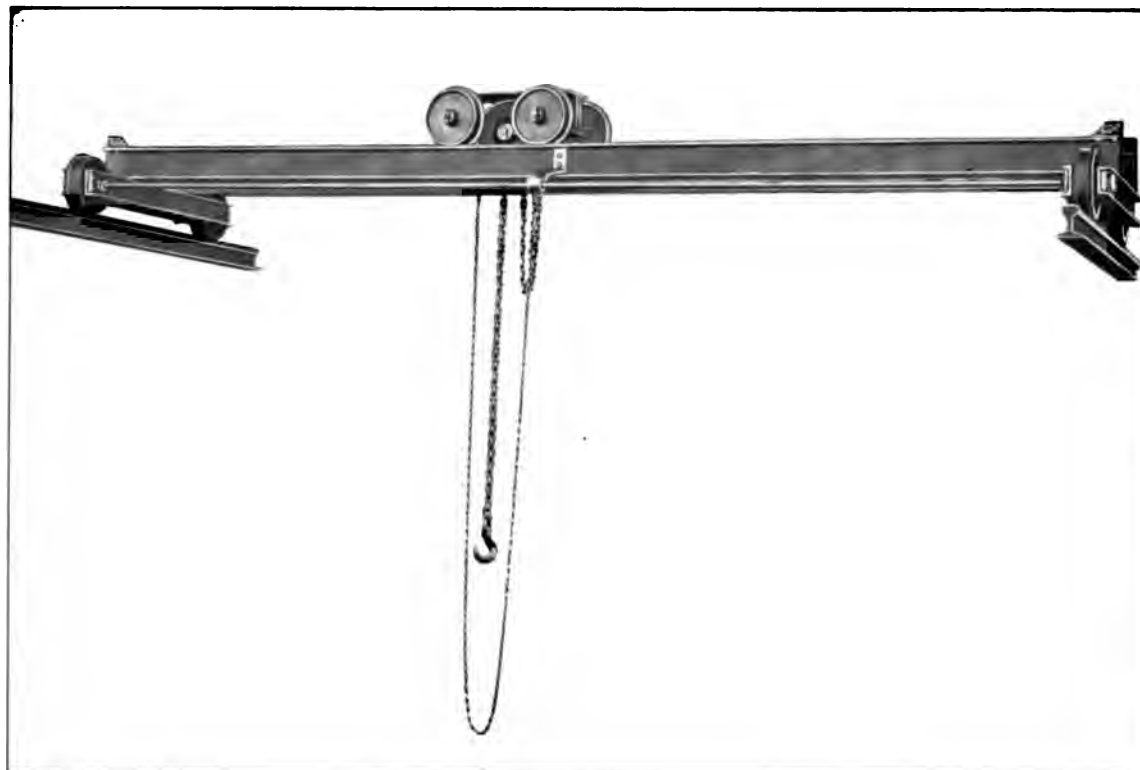
HAND TRAVELING CRANE.

Light Pulley Block Type. Single I-beam Girder, Steel Truck Ends.
Code Word for Crane, **GEWRICHT**.



HAND TRAVELING CRANE.

Light Pulley Block Type. Single I-beam Girder, Cast Steel or Iron Truck Ends.
Code Word for Crane, **GEWORSTELD.**



HAND TRAVELING CRANE.

Light Pulley Block Type. Double I-beam Bridge, Steel Truck Ends.
Code Word for Crane, **HAPLANTHE.**



HAND TRAVELING CRANE.

Light Pulley Block Type. Pendent Chain for moving Bridge is attached to and moves with Trolley.
Code Word for Crane, **GEZADELD.**



HAND TRAVELING CRANE.

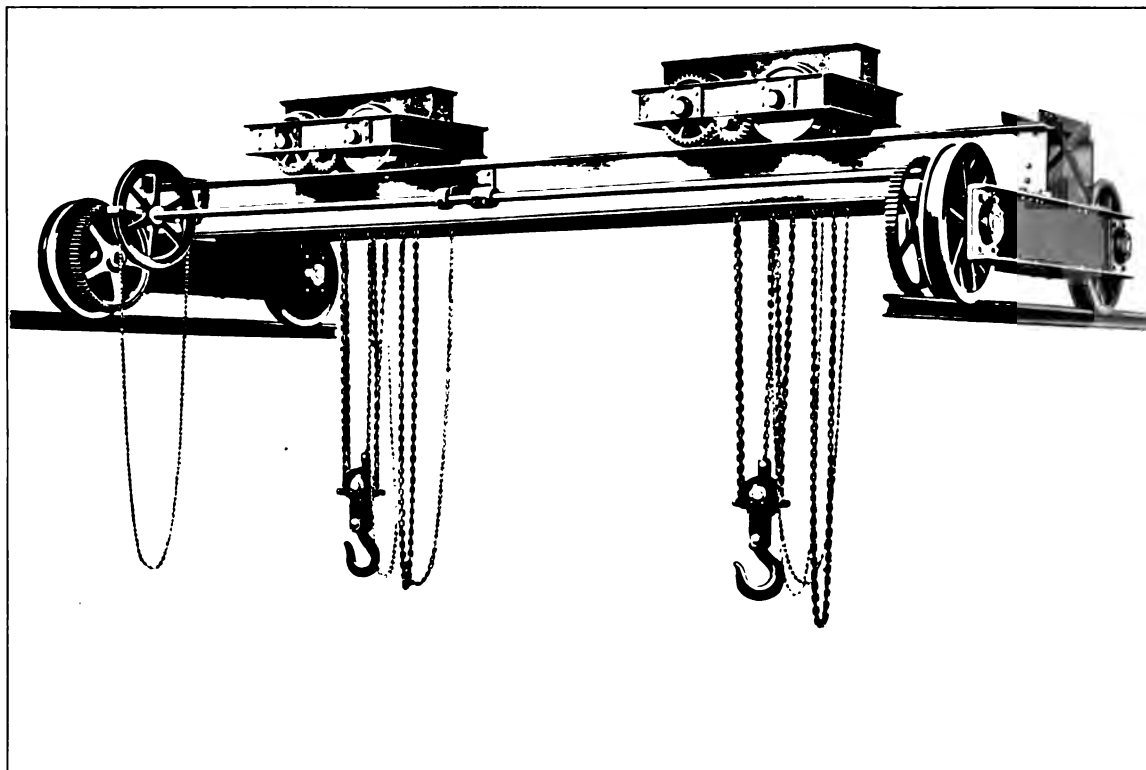
Light Pulley Block Type. Special Pattern, with Extension Arm.
Code Word for Crane, **HERZLICH.**



HAND TRAVELING CRANE.

Light Pulley Block Type. Double I-beam Bridge, Steel Truck Ends.

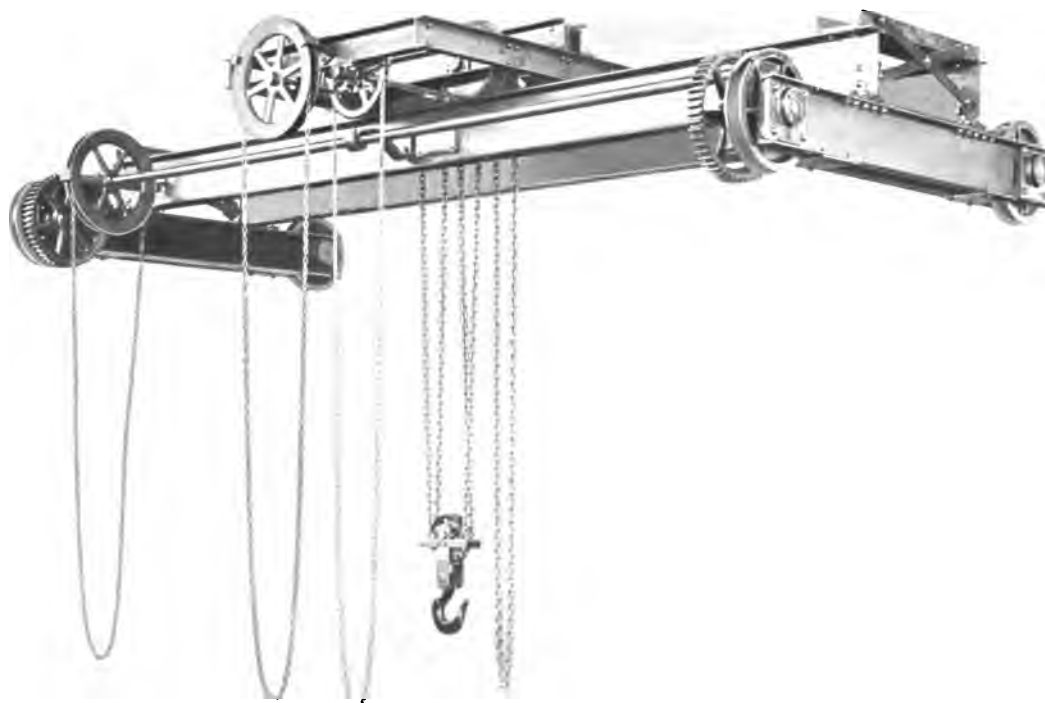
Code Word for Crane, **HARDENING.**



HAND TRAVELING CRANE, TWO INDEPENDENT TROLLEYS.

Pulley Block Type. Double I-beam Bridge, Steel Truck Ends.

Code Word for Crane, **GEWRIEMELD.**

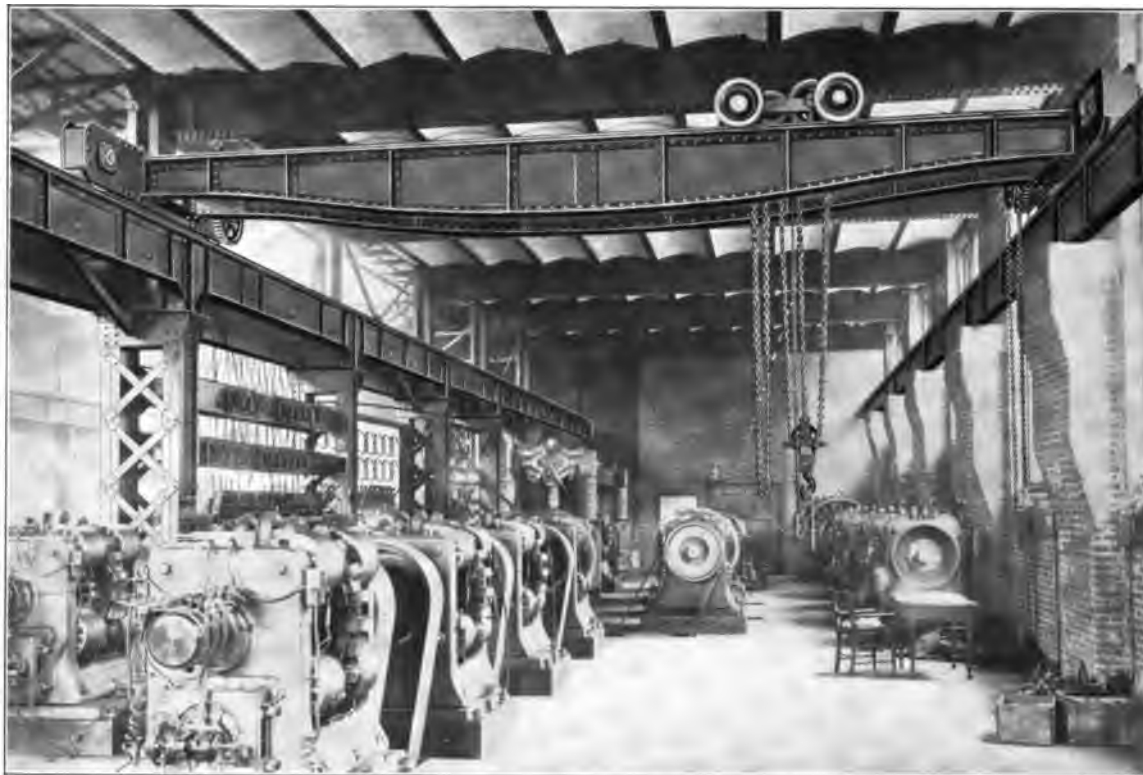


HAND TRAVELING CRANE.

Pulley Block Type. Hoisting and Trolley Travel Chains Extended on One Side of Girder.

Code Word for Crane, Single Trolley, **HETEROLOBE.**

Code Word for Crane, Double Trolley, **GEWRONGELD.**



HAND TRAVELING CRANE.

Heavy Pulley Block Type, Built-up Steel Girders, Curved Lower Chord.

Code Word for Crane, Single Trolley, **HANGLIP.**

Code Word for Crane, Double Trolley, **GEWUEHL.**

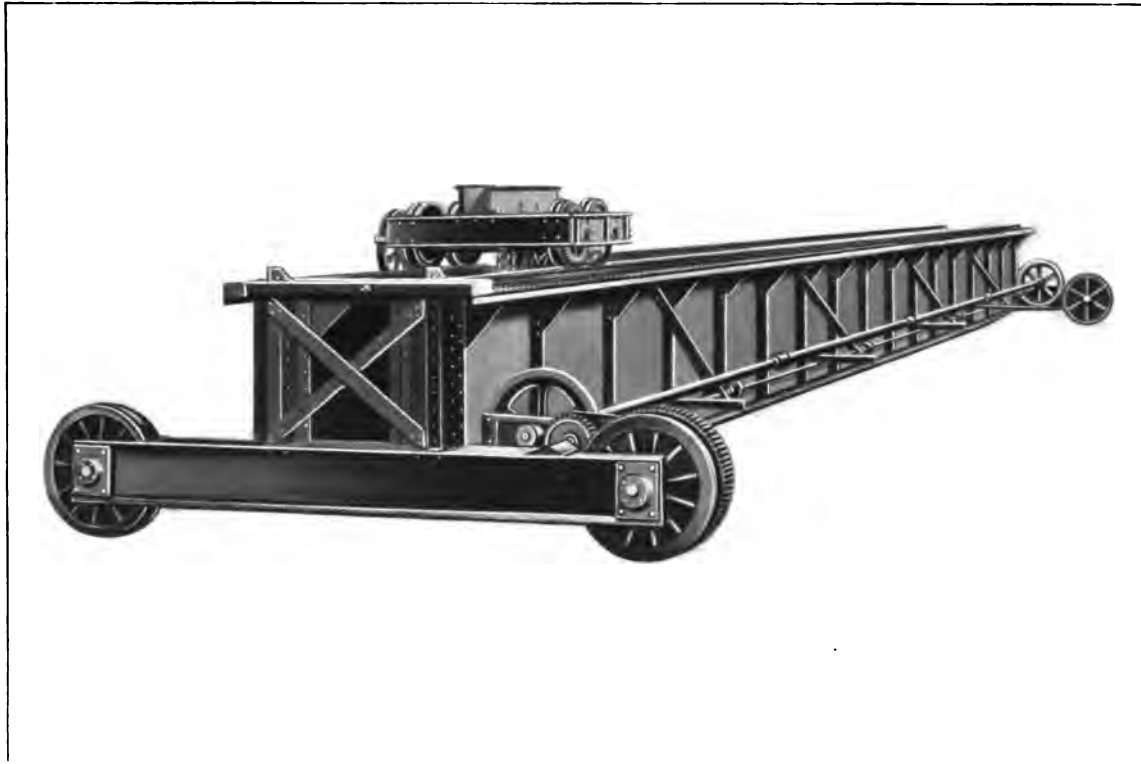


HAND TRAVELING CRANE.

Heavy Pulley Block Type, Built-up Steel Girders. Trolley running on Inside of Girders to save Vertical Clearance.

Code Word for Crane, Single Trolley, HEUMARDER.

Code Word for Crane, Double Trolley, GEWUERZBAU.



HAND TRAVELING CRANE.

Heavy Pulley Block Type, Built-up Steel Girders. Trolley running on Top of Girders.

Code Word for Crane, Single Trolley, **HERVENTO.**

Code Word for Crane, Double Trolley, **GEWUERM.**

Partial List of Users of Hand Traveling Cranes.

U. S. GOVERNMENT, Various Stations	10 Cranes
ARNOLD PRINT WORKS, North Adams, Mass.	15 "
U. S. FINISHING CO., Paterson, N. J.	40 "
LOWELL MACHINE SHOP, Lowell, Mass.	7 "
NEW YORK, NEW HAVEN & HARTFORD RAILROAD, Readville, Mass.	1 "
SMITH & VAILE CO., Dayton, Ohio	2 "
CONSOLIDATED GAS COMPANY, New York, N. Y.	2 "
U. S. ROLLING STOCK COMPANY, Anniston, Ala.	2 "
L. WOLFF MANUFACTURING COMPANY, Chicago, Ill.	6 "
CARNEGIE STEEL COMPANY, Pittsburg, Pa.	2 "
CLEVELAND FURNACE COMPANY, Cleveland, Ohio	1 "
CAMBRIA IRON WORKS, Johnstown, Pa.	4 "
WALTHAM DYE AND BLEACHING WORKS, Waltham, Mass.	8 "
MISSOURI ELECTRIC LIGHT AND POWER COMPANY, St. Louis, Mo.	2 "
WESTINGHOUSE ELECTRIC AND MANUFACTURING COMPANY, Pittsburg, Pa.	2 "
WATERTOWN ARSENAL, Watertown, Mass.	4 "
NORWALK IRON WORKS, South Norwalk, Conn.	4 "
UNITED GAS IMPROVEMENT COMPANY, Philadelphia, Pa.	1 "
RICHMOND LOCOMOTIVE WORKS, Richmond, Va.	3 "
ARCTIC ICE COMPANY, Cleveland, Ohio	50 "
DE LA VERGNE REFRIGERATING MACHINE CO., New York, N. Y.	10 "
NEW YORK MUTUAL GAS LIGHT COMPANY, New York, N. Y.	1 "
COMP' DE TRANS' ELECTRICA, Mexico	1 "
MITSUI & CO., Kobe, Japan	2 "
LA CAPITAL TRAMWAYS COMPANY, Buenos Ayres, South America	6 "

The Brown Hoisting Machinery Company, Incorporated.

Jib Cranes.

NOTE: See additional Code Words on page 255.

Jib Cranes.

All inquiries and orders for Jib Cranes should state the following particulars:

1. Capacity in pounds to be lifted, stating maximum and average loads.
2. Radius at which load is to be lifted.
3. Height, floor to ceiling, into which crane is to go.
4. Whether hand, electric, steam or other power.
5. Type as shown on following pages.
6. State service crane is to perform.
7. Other dimensions of entire space into which crane is to go.
8. State Crane Catalog, 1903 Edition, if reference is made to pages in this book.

Power Jib Cranes.

Electric, Steam, Hydraulic or Compressed Air, operated by One, Two or Three Motors.

FRAMING. Built up of steel shapes, and riveted plate girder work, stiffened by tie rods or struts.

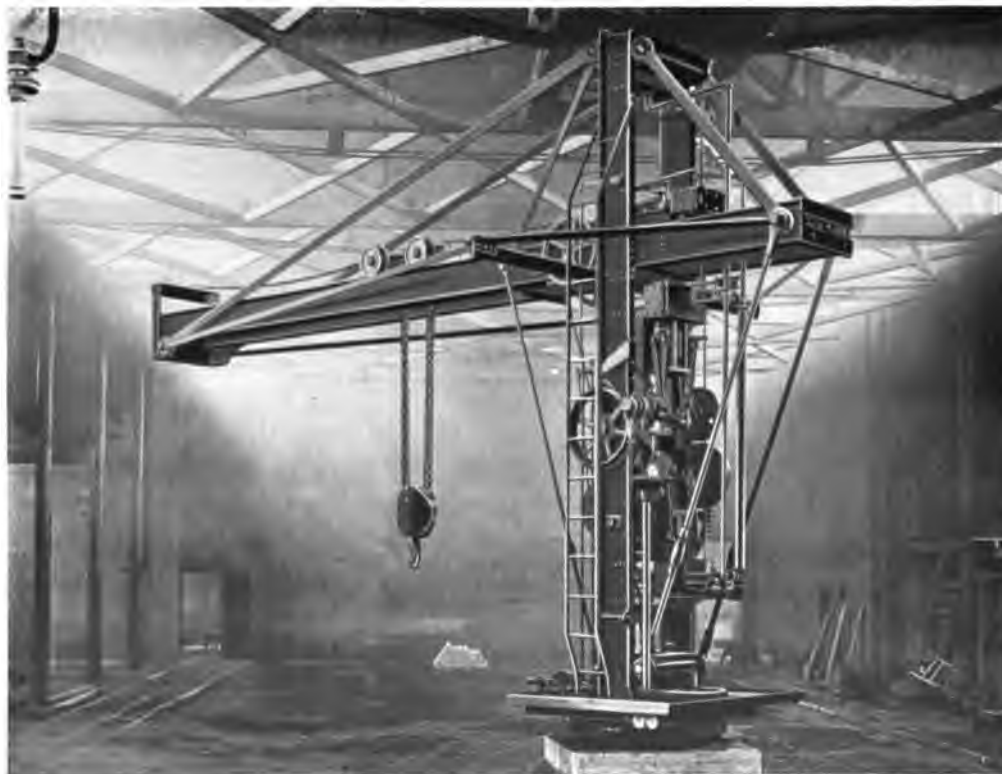
DRUM. Grooved, and large enough to receive the full length of chain in a single wrap. The load at all times is under perfect control of the operator.

INDEPENDENT MOTORS OR ENGINES. Each motor or engine is controlled by a separate lever in convenient reach of one operator. If desired, the crane can be fitted with one motor or engine, and the separate functions operated by clutches.

SPEEDS. Changeable at will.

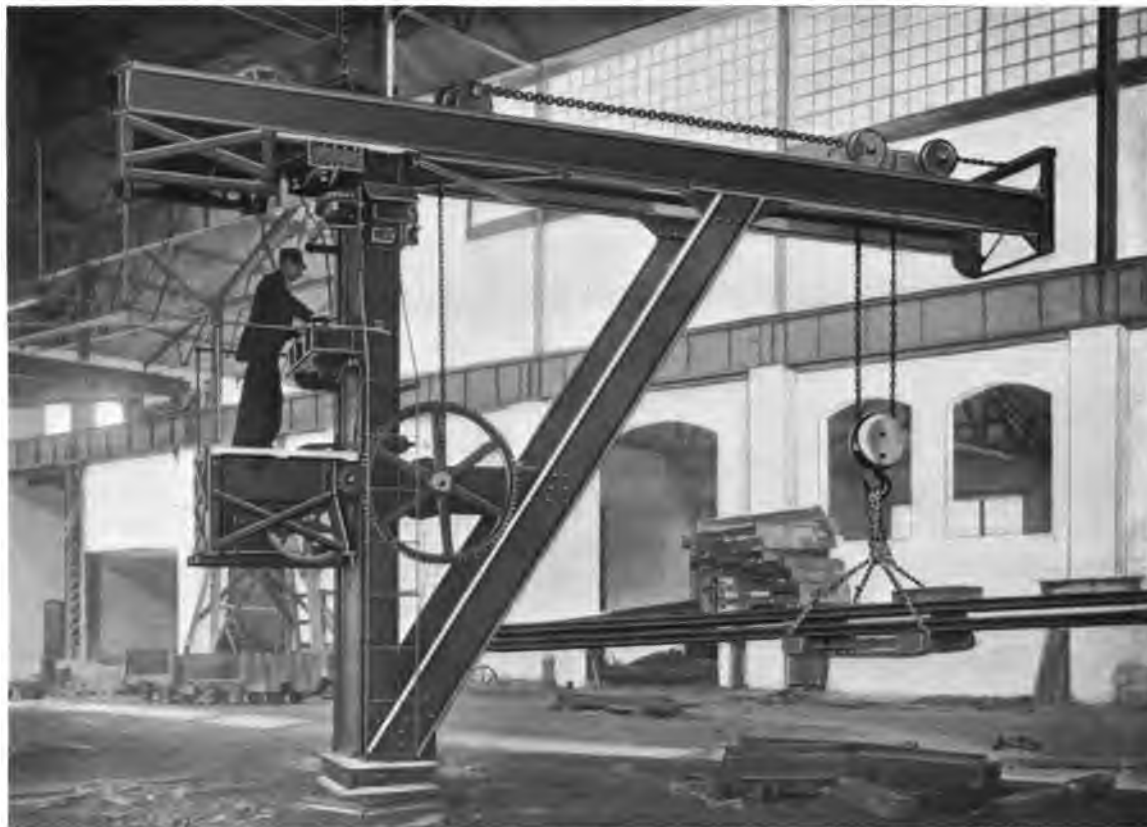
LOWERING. Effected by reversing motors or engines, and dispatch lowering by strap brake.

CAPACITY. These cranes are built of all capacities and to meet the requirements of all kinds of service for foundries, machine shops and outdoor work.



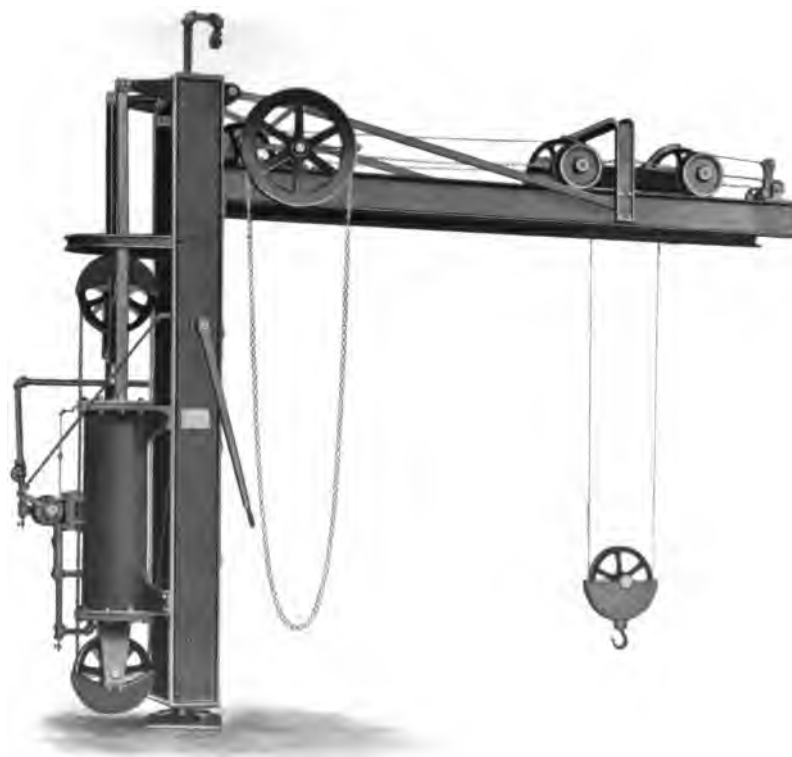
JIB CRANE. HEAVY STEAM POWER TYPE.

Code Word for Crane, GEBIGGELD.



JIB CRANE. HEAVY ELECTRIC POWER TYPE.

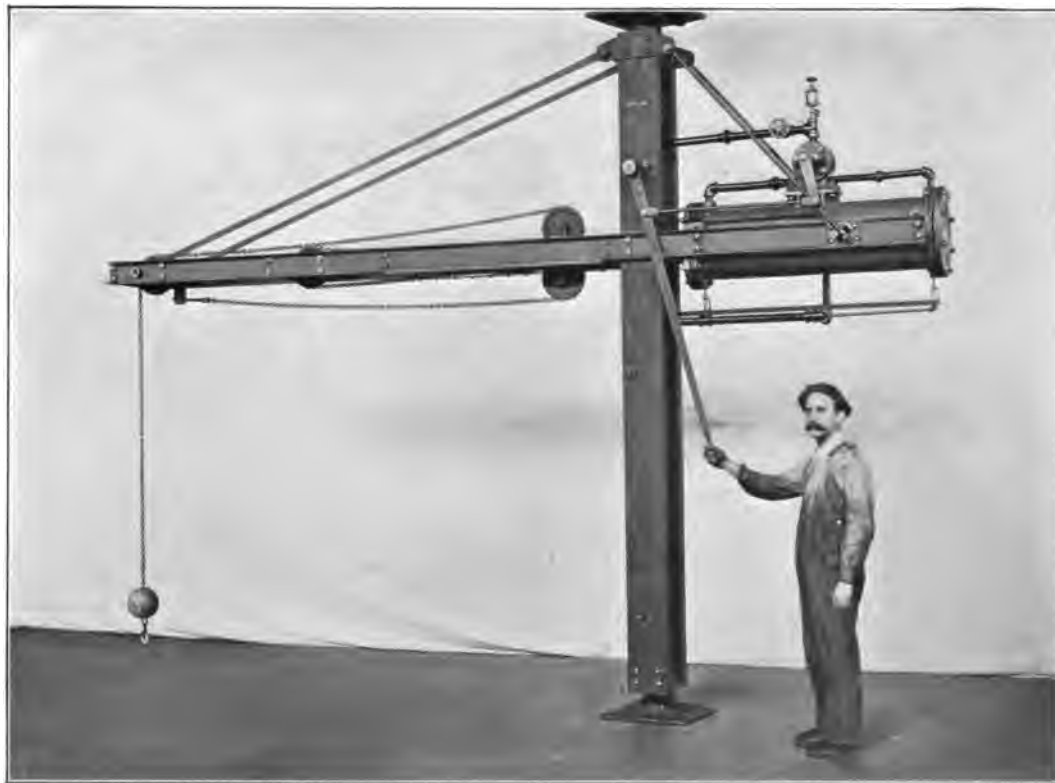
Code Word for Crane, **GEBROKEN.**



QUICK ACTING STEAM, HYDRAULIC OR AIR JIB CRANE, VERTICAL CYLINDER.

1 to 5 Tons Capacity.

Code Word, GAZOGENE.



DIRECT QUICK ACTING STEAM OR AIR JIB CRANE, HORIZONTAL CYLINDER.

$\frac{1}{2}$ to 2 Tons Capacity.

Code Word, GAZIER.

Heavy Hand Jib Cranes.

FRAMING. Built up of steel shapes and plate girder work, stiffened by tie rods or struts.

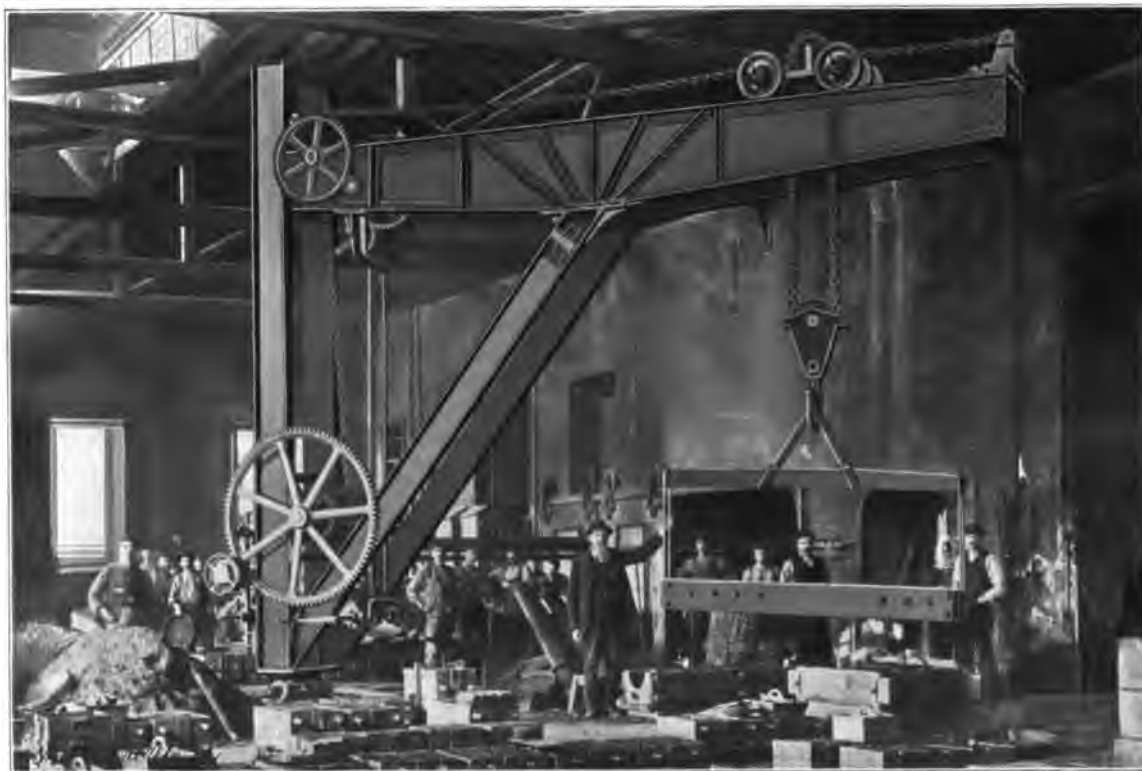
HOISTING GEAR. Consists of a Standard Crane Winch. (See page 111.)

TROLLEY TRAVEL. Effected by hand cranks or by pendent hand chains, as preferred.

SPEEDS. Two speeds of hoists are provided, as explained on page 111. Two speeds of trolley travel are provided.

REGULAR SIZES. Ten to thirty tons.

SUITABLE for use in machine shops, boiler shops, foundries, and for all classes of indoor and outdoor work.



JIB CRANE. HEAVY HAND POWER TYPE.

Code Word for Crane, **GEBURTREIF.**

Light Hand Jib Cranes.

FRAME. Built up of steel shapes or plate girder construction, stiffened by tie rods or struts.

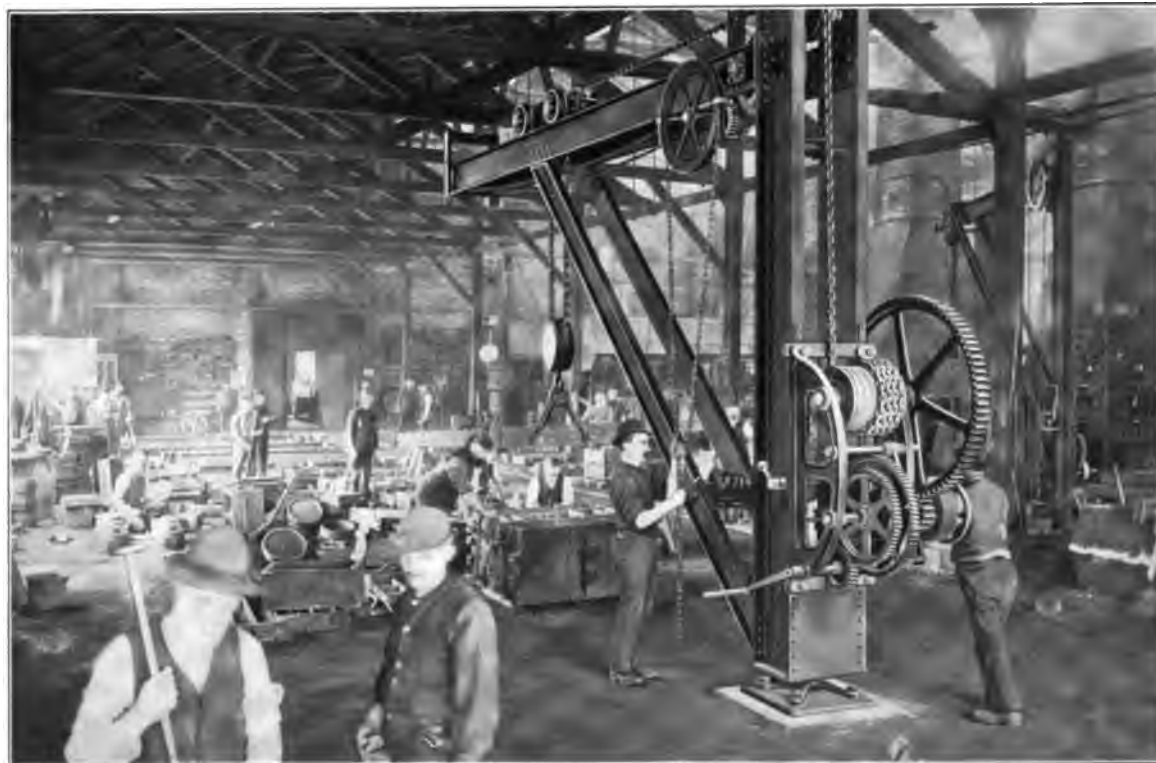
HOISTING GEAR. Is our Standard Crane Winch. (See page 111.)

TROLLEY TRAVEL. Is effected by pendent hand chains or cranks.

SPEEDS. Two speeds of hoist are provided, as explained on page 111. On all cranes of five tons capacity and upward, two speeds of trolley travel are provided.

REGULAR SIZES. One to ten tons.

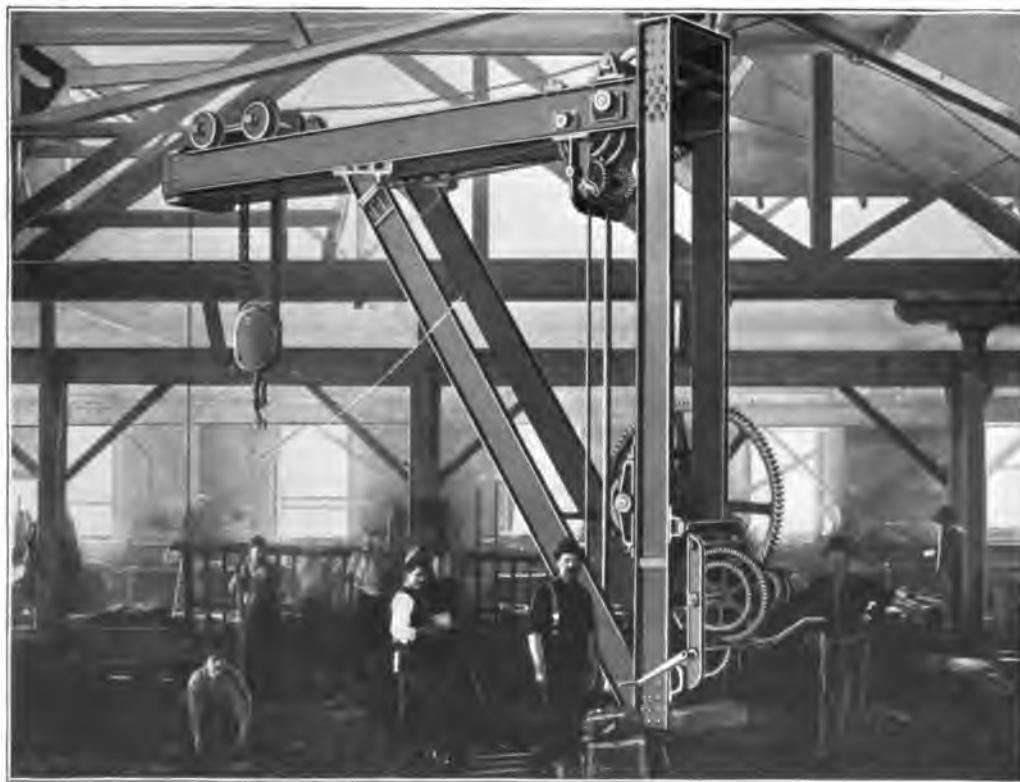
SUITABLE. For use in machine shops, boiler shops, foundries, etc.



JIB CRANE. LIGHT HAND POWER TYPE.

Trolley Travel by Pendent Hand Chain.

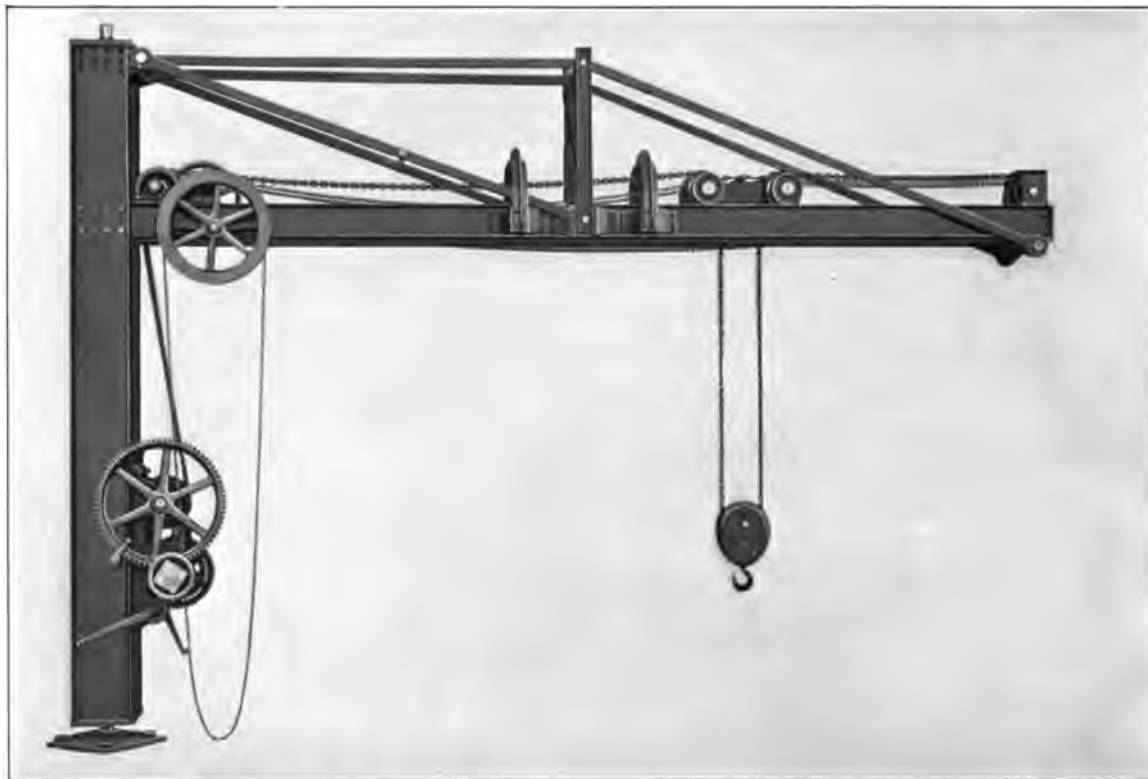
Code Word for Crane, **GEDENKBILD.**



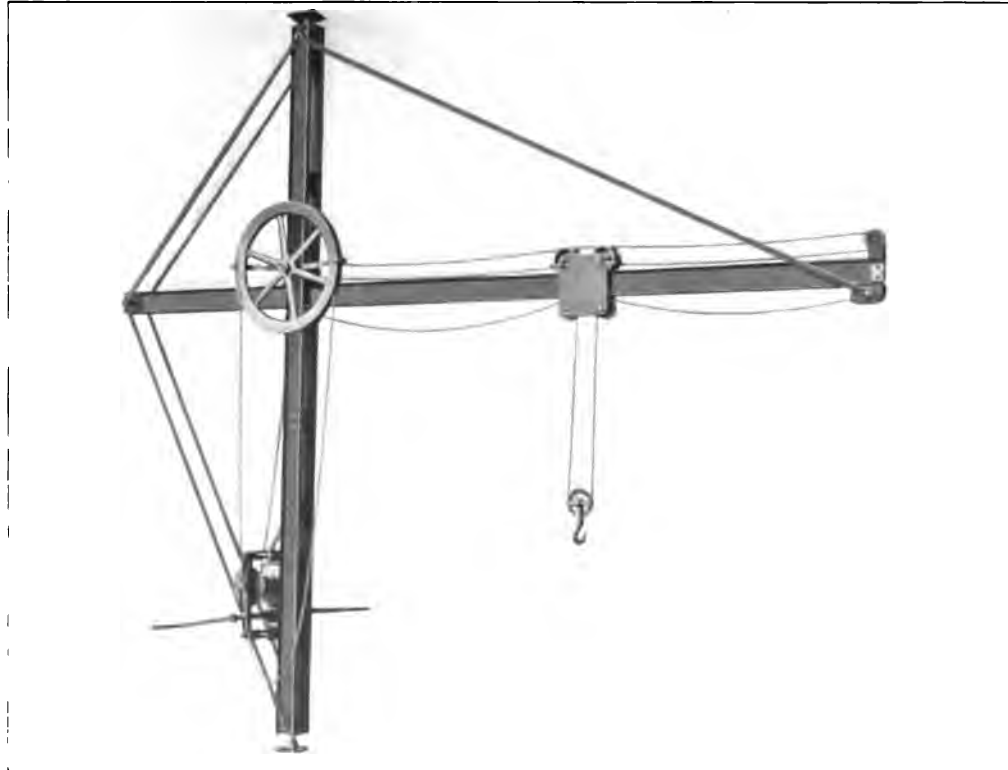
JIB CRANE. LIGHT HAND POWER TYPE.

Trolley Travel by Hand Cranks.

Code Word for Crane, GEGEISSELT.



JIB CRANE. LIGHT HAND POWER TYPE.
Code Word for Crane, GEGENKREIS.



JIB CRANE. LIGHT HAND POWER TYPE.
Code Word for Crane, **GEGENSONNE.**

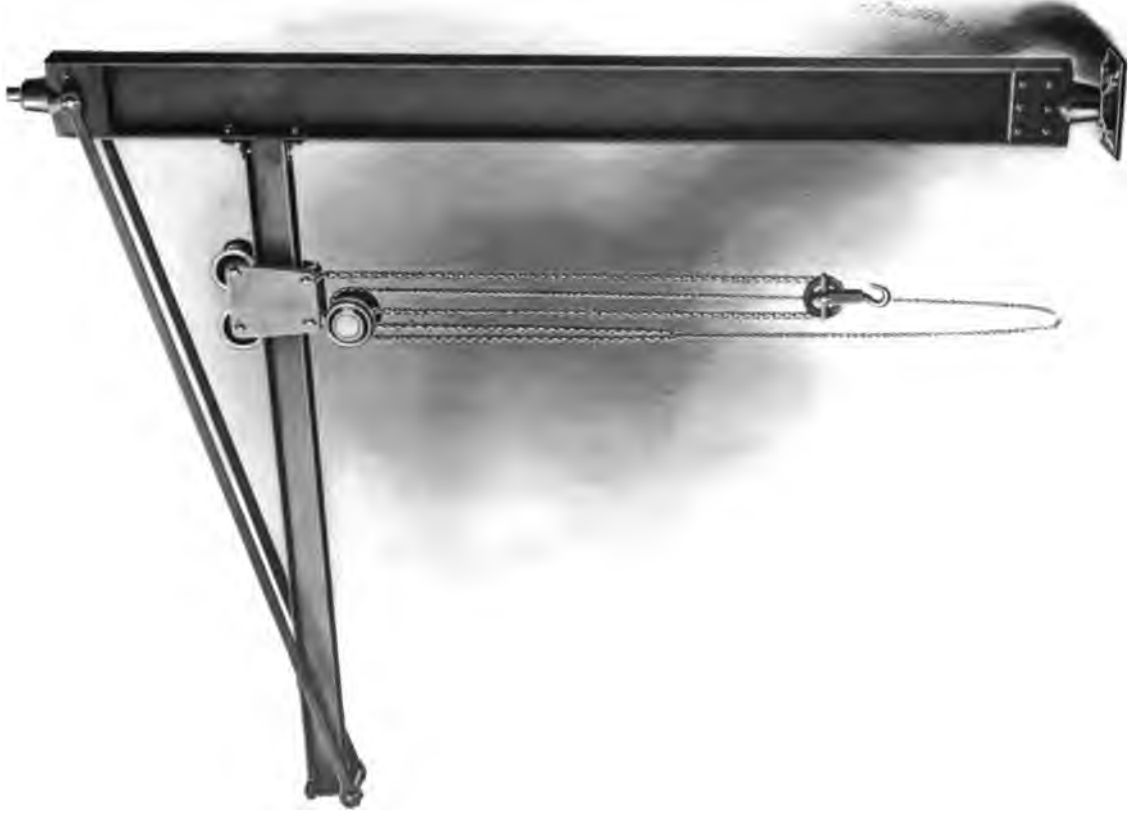
Pulley Block Jib Cranes.

FRAME. Built up of steel shapes and of tie rod construction.

HOISTING MECHANISM. Consists of a Weston Triplex Pulley Block, giving the greatest efficiency for hoisting, and sustaining the load safely at any point.

REGULAR SIZES. One to five tons.

ADAPTED. For light service of all kinds.



JIB CRANE. PULLEY BLOCK TYPE.

Single Iron.

Code Word for Crane, GEGLAUBT.



JIB CRANE. PULLEY BLOCK, BRACKET TYPE.

Supported on posts in shop.

Code Word for Crane, GEGOMD.

Partial List of Users of Jib Cranes.

UNITED STATES GOVERNMENT	10	Cranes.
COLORADO FUEL AND IRON COMPANY, Pueblo, Col.	2	"
PENNSYLVANIA RAILROAD COMPANY, Altoona, Pa.	2	"
CENTRAL IRON WORKS, Harrisburg, Pa.	3	"
CATASAUQUA MANUFACTURING COMPANY, Catasauqua, Pa.	2	"
WICKWIRE BROTHERS, Cortland, N. Y.	2	"
TRENTON IRON COMPANY, Trenton, N. J.	3	"
ENSIGN MANUFACTURING COMPANY, Huntington, W. Va.	3	"
CLEVELAND ROLLING MILL COMPANY, Cleveland, Ohio	2	"
THE BAACKES WIRE NAIL COMPANY, Cleveland, Ohio	2	"
READING FOUNDRY COMPANY, Reading, Pa.	8	"
NATIONAL TUBE WORKS, McKeesport, Pa.	2	"
THE H. B. SMITH COMPANY, Westfield, Mass.	3	"
WESTINGHOUSE ELECTRIC AND MANUFACTURING COMPANY, Pittsburg, Pa.	5	"
INGERSOLL-SERGEANT DRILL COMPANY, Easton, Pa.	3	"
SHIFFLER BRIDGE COMPANY, Pittsburg, Pa.	7	"
HENRY DISSTON & SONS, Philadelphia, Pa.	2	"
BALL ENGINE COMPANY, Erie, Pa.	2	"
RICE, BARTON & FALES, Worcester, Mass.	11	"
ACAJUTLA WHARF COMPANY, San Salvador	6	"

The Brown Hoisting Machinery Company, Incorporated.

Floating Cranes.

NOTE: See also additional Code Words on page 255.

Floating Cranes.

All inquiries and orders for Floating Cranes should state the following particulars :

1. Capacity to be lifted. State maximum and average loads and how often lifted.
2. Distance over freeboard at which these loads are to be lifted.
3. Height in clear over water to under side of hook.
4. Size of pontoon, if same is limited in any way.
5. Speeds of the various functions, if there is any preference.
6. General conditions under which crane is to operate.
7. State Crane Catalog, 1903 Edition, if reference is made to pages in this book.

100 Ton Floating Cantilever Crane.

The crane shown on page 156 is the "Hercules," built by this company for the United States Navy, the construction being entirely of steel, including steel pontoon 60 by 100 feet by 11 feet depth, with 2 feet freeboard under full load.

CONSTRUCTION. The design of this crane is a departure from floating cranes heretofore made. The cantilever arms are rigid, and the suspended load passes through the legs from end to end of arms. The legs supporting the cantilevers are far enough apart to allow any load up to 40 feet in width to pass through. In this way a load can be deposited on deck of pontoon or can be placed on a separate pontoon under the rear cantilever arm. This is a great advantage over the old form of floating crane, which cannot reach its own deck with a heavy load.

COUNTERWEIGHT. The pontoon has, in addition to the usual water ballast, an automatic counterweight weighing 250 tons, traveling through its central portion from end to end automatically, operated by an independent pair of engines in such a way as to keep the pontoon on an even keel at all times, no matter what the load or changes of load may be.

MACHINERY. The engines, boilers and pumps are located in the pontoon amidships, on either side of the counterweight path, with operator's house above the engines at such a height as to command a clear view of the hook in every stage of its movement.

STEAM CAPSTANS. Four steam capstans, one at each corner, are provided for warping the crane into position, etc.



100 TON FLOATING CANTILEVER CRANE "HERCULES."

Built for U. S. Navy, New York Navy Yard.

PONTOON. The deck of the pontoon is of such strength that heavy guns or armor plate may be carried and stored on same.

CAPACITY. While this crane has an official rating of 100 gross tons, yet the specifications under which it is built are such as to provide for much heavier emergency lifts.

Weight approximately, 1,200 tons.

Code Word, FISHROOM.

List of Users of Floating Cranes.

U. S. Government,

New York Navy Yard, One Crane,

100 Gross Tons Capacity.

The Brown Hoisting Machinery Company, Incorporated.

Stationary Hand Bridge Cranes.

NOTE: See additional Code Words on page 255.

Stationary Hand Bridge Cranes.

All inquiries and orders for Stationary Hand Bridge Cranes should state the following particulars:

1. Capacity, in pounds to be lifted; state maximum and average load and how often lifted.
2. Span, in feet, between legs.
3. Height, from top of track to under side of girders.
4. State Crane Catalog, 1903 Edition, if reference is made to pages in this book.

Stationary Hand Bridge Cranes.

FRAME. Built up of steel shapes and riveted girder work, strongly braced.

HOISTING GEAR. Consists of a Standard Crane Winch. (See page 111.)

TROLLEY TRAVEL. Effected by sprocket wheel with pendent hand chain or by cranks, conveniently placed at one end of the bridge.

SPEEDS. Two speeds of hoist are provided, as explained on page 111. On all cranes of five tons capacity and upward, two speeds of trolley travel are provided.

REGULAR SIZES. Five to thirty tons.

SUITABLE. For railway stations, freight yards, loading and unloading of merchandise to and from cars, etc.



15 TON STATIONARY HAND BRIDGE CRANE, 27 FT. SPAN.

Pennsylvania Railroad, 37th Street, N. R., New York.

Code Word for Crane, GEKELTERT.



30 TON STATIONARY HAND BRIDGE CRANE, 44 FT. SPAN.

New York, New Haven & Hartford Railroad, Providence, R. I.

Code Word for Crane, **GEKENMERKT.**



30 TON STATIONARY HAND BRIDGE CRANE, 24 FT. SPAN.

New York, New Haven & Hartford Railroad, Woodlawn, N. Y.

Code Word for Crane, GEKEIFELT.

Price List of Stationary Hand Bridge Cranes.

F. O. B. Cleveland, Ohio.

Prices include Foundation Bolts and Plans.

Span, etc.		5 Ton	10 Ton	15 Ton	20 Ton	25 Ton	30 Ton
23 ft. Span, 1 Track and 1 Roadway...	Price.....	\$	\$	\$	\$	\$	\$
	Weight, lbs..	11,000	16,000	19,000	24,000	33,000	34,000
	Code Word...	Gehueter	Gehuifd	Gehuisvest	Gehuldigd	Gehungert	Gehungkerd
36 ft. Span, 2 Tracks and 1 Roadway...	Price.....	\$	\$	\$	\$	\$	\$
	Weight, lbs..	16,000	21,000	25,000	28,000	35,000	36,000
	Code Word..	Geigensteg	Geigenton	Geigenwerk	Geiglein	Geilheid	Geimpft
49 ft. Span, 3 Tracks and 1 Roadway...	Price.....	\$	\$	\$	\$	\$	\$
	Weight, lbs..	21,000	25,000	30,000	33,000	44,000	46,000
	Code Word..	Geissvogel	Geisswedel	Geistesarm	Geistesohr	Geistesruh	Geistigen

Other sizes can be built. Prices on application.

Partial List of Users of Stationary Hand Bridge Cranes.

PENNSYLVANIA RAILROAD COMPANY	9	Cranes
PHILADELPHIA & READING RAILROAD	6	"
BALTIMORE & OHIO RAILROAD	1	"
NEW, YORK, NEW HAVEN & HARTFORD RAILROAD	4	"
EDGE MOOR IRON WORKS, Wilmington, Del.	2	"
PRATT & WHITNEY, Hartford, Conn.	1	"
PALMER'S DOCK COMPANY, Brooklyn, N. Y.	1	"
SCHUYLER ELECTRIC COMPANY, Middleton, Conn.	1	"
J. A. ROEBLING & SON, Trenton, N. J.	1	"
McKEE & MILSON, Paterson, N. J.	2	"
EVENS & TOMBS, Boston, Mass.	1	"
WESTERN FILE COMPANY, Beaver Falls, Pa.	1	"
GORHAM MANUFACTURING COMPANY, Providence, R. I.	1	"
ELECTRIC PIPE BENDING COMPANY, Harrison, N. J.	1	"
BOSTON WATER SUPPLY DEPARTMENT, Boston, Mass.	1	"
P. W. BURNHAM & COMPANY, Philadelphia, Pa.	1	"
GRAND TRUNK RAILROAD, Montreal, Canada	2	"

The Brown Hoisting Machinery Company, Incorporated.

Pillar Cranes and Hand Wrecking Cranes.

NOTE: See additional Code Words on page 255.

Pillar Cranes and Hand Wrecking Cranes.

All inquiries and orders for Pillar or Wrecking Cranes should state the following particulars:

1. Capacity in tons to be lifted ; state maximum and average load and how often lifted.
2. Radius at which load is to be lifted.
3. Is crane to be mounted on masonry foundation, or pier?
4. State if variable radius boom is wanted.
5. State if rotating gear is wanted.
6. State if whip hoist is wanted.
7. State if electric power crane is wanted.
8. State Crane Catalog, 1903 Edition, if reference is made to pages in this book.

Standard Pillar Cranes.

PILLAR. Of cast iron, very strong and heavily proportioned.

BOOM. Of steel channels, supported by steel tie rods, and with rollers at base of pillar.

HOISTING GEAR. Consists of a Standard Crane Winch. (See page 111.)

SPEEDS. Two speeds of hoist are provided, as explained on page 111.

REGULAR SIZES. One to twenty-five tons. Radius and hoist regulated to suit customer's requirements.

SUITABLE for use at railway stations and yards, iron and steel works, docks, etc.

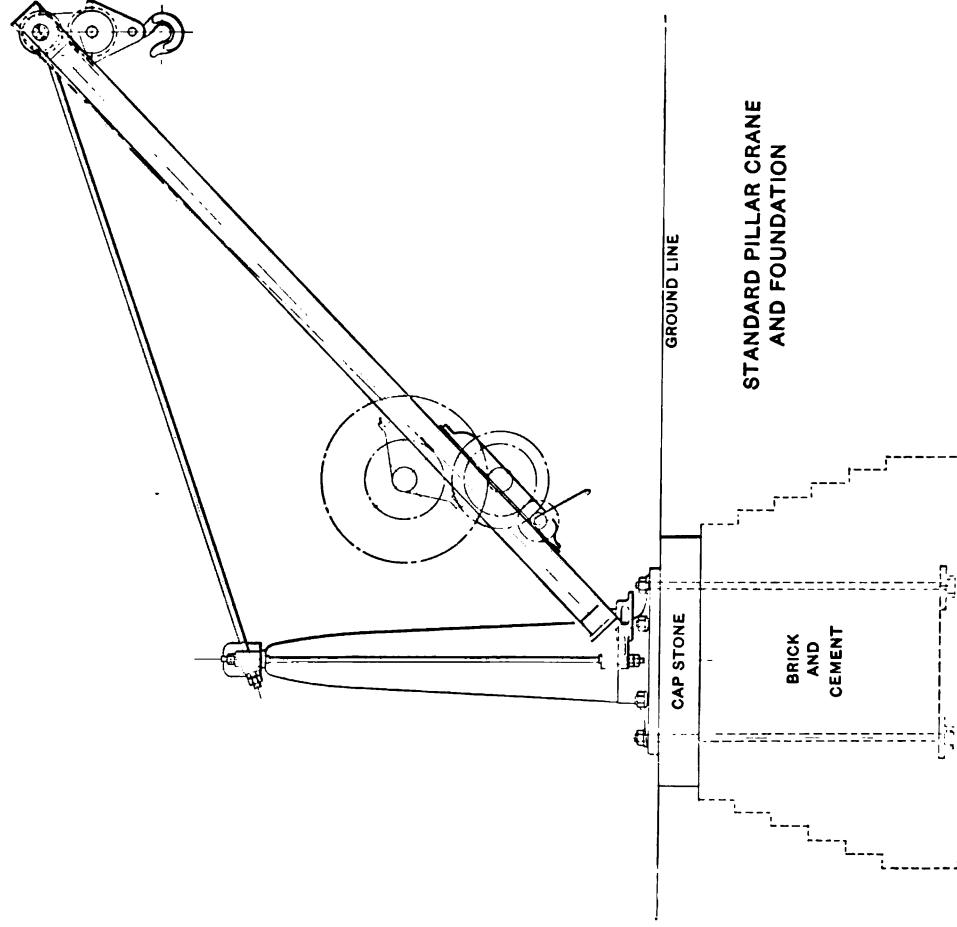
ROTATING GEAR. If desired, these cranes can be fitted with gearing operated by cranks for rotating the boom with its suspended load.

WHIP HOIST. A whip hoist can also be fitted, enabling the load to be lifted by means of an engine, capstan, or other device located away from the crane.

POWER CRANES. We can furnish these pillar cranes operated by electric or other power.



Hoisting Mechanism of 20 Ton Pillar Crane.



STANDARD HAND PILLAR CRANE.
Showing Foundation and Method of Erection.



2 TON HAND PILLAR CRANE, 15 FT. RADIUS.

Code Word, GEKIBBEL.



2 TON HAND PILLAR CRANE, 10 FT. RADIUS.
With Special Boom

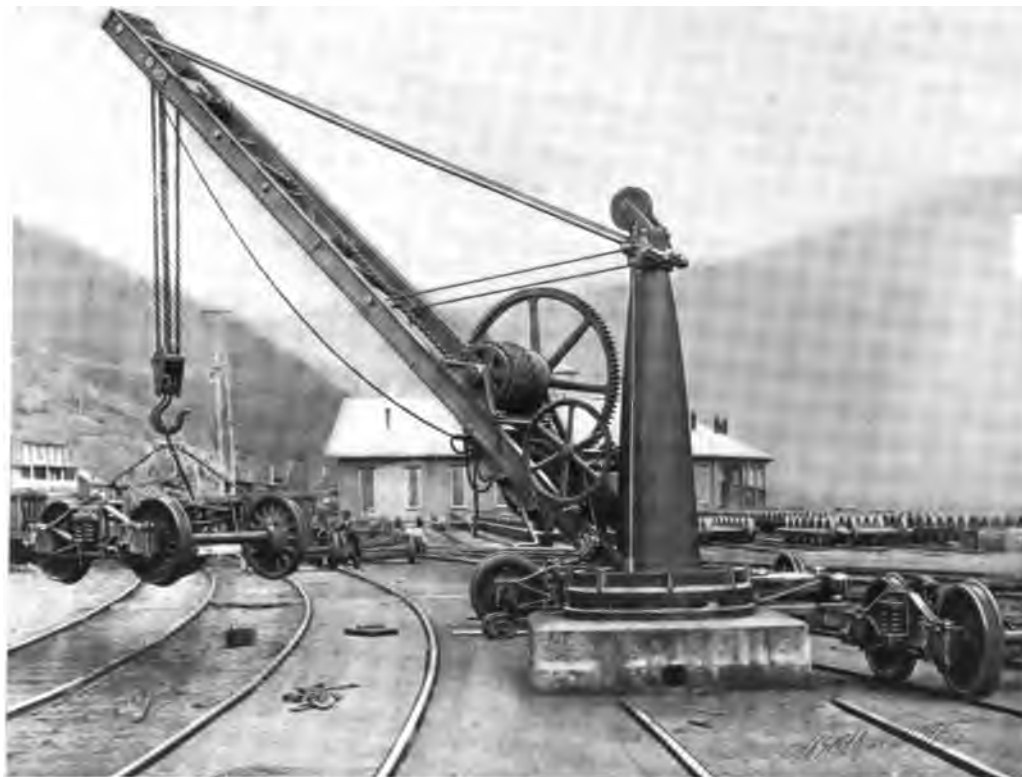


2½ TON PILLAR JIB CRANE.
American Axe & Tool Co., Pittsburg, Pa.



1 TON PILLAR CRANE, 20 FT. RADIUS.

With Special Boom.



10 TON HAND PILLAR CRANE, 20 FT. RADIUS.

With Whip Hoist and Rotating Gear.
Lehigh Valley Railroad, Packerton, Pa.
Code Word, **GELECHZET.**



10 TON HAND PILLAR CRANE (PLAIN), 20 FT. RADIUS.

Code Word, GEKLETTERT.



15 TON HAND PILLAR CRANE, 30 FT. RADIUS.

With Rotating Gear.

New York Navy Yard, New York.

Code Word, GEKRIKKAK.



30 TON HAND PILLAR CRANE, 35 FT. RADIUS.

U. S. Naval Station, Pensacola, Fla.



15 TON PILLAR CRANE, 30 FT. RADIUS.
U. S. Naval Station, Bremerton, Wash.



20 TON ELECTRIC PILLAR CRANE, 20 FT. RADIUS.

Boston Navy Yard.



20 TON ELECTRIC PILLAR CRANE, 20 FT. RADIUS.

Boston & Maine Railroad, Boston, Mass.

Code Word, GELASTIC.



15 TON ELECTRIC PILLAR JIB CRANE.

Supported entirely by heavy masonry foundation.

A. Garrison Foundry Co., Pittsburg, Pa.

Hand Wrecking Cranes.

PILLAR. Of cast iron, very strong, and heavily proportioned.

BOOM. Of steel channels, supported by steel tie rods, and with rollers at base of pillar.

HAND HOISTING MECHANISM. Consists of a Standard Crane Winch. (See page 111.)

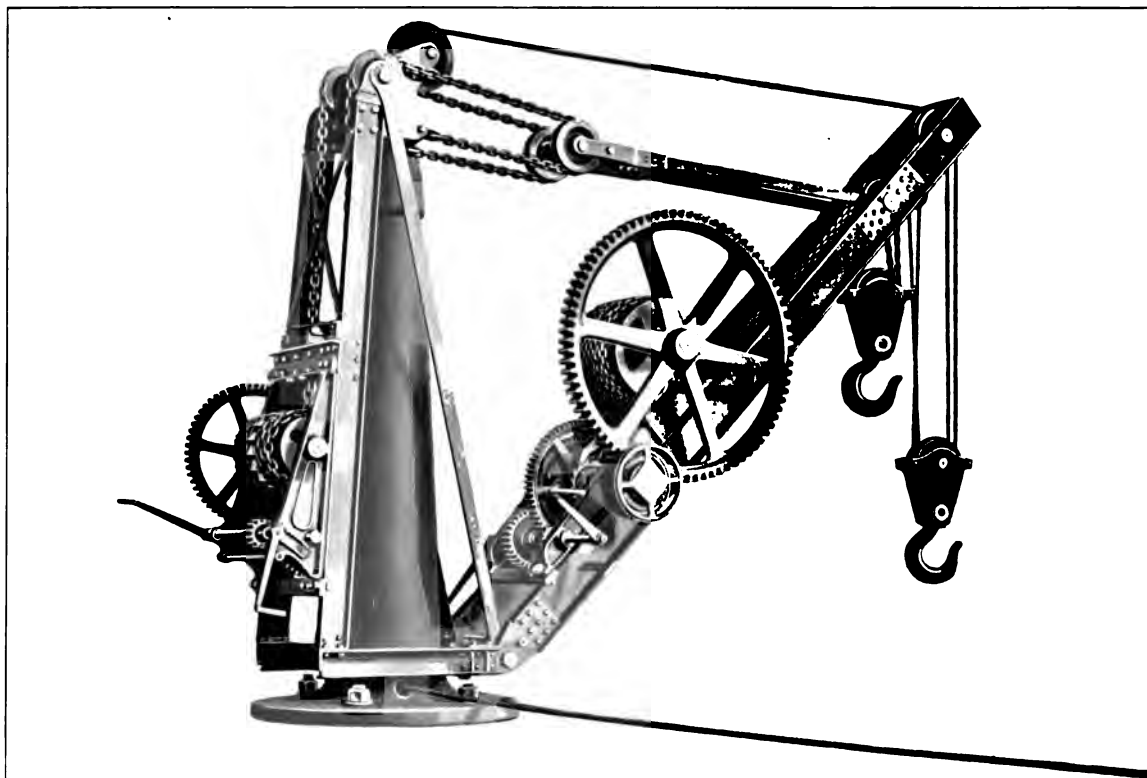
SPEEDS. Two speeds of hoist are provided, as explained on page 111.

WHIP HOIST. These cranes are also fitted with a whip rig, enabling the load to be lifted by the use of a locomotive, winding engine, or capstan located away from the crane.

VARIABLE RADIUS. Raising and lowering of the boom is effected by a separate crane winch, fitted with safety lowering device, etc.

CAPACITY. Five to thirty tons.

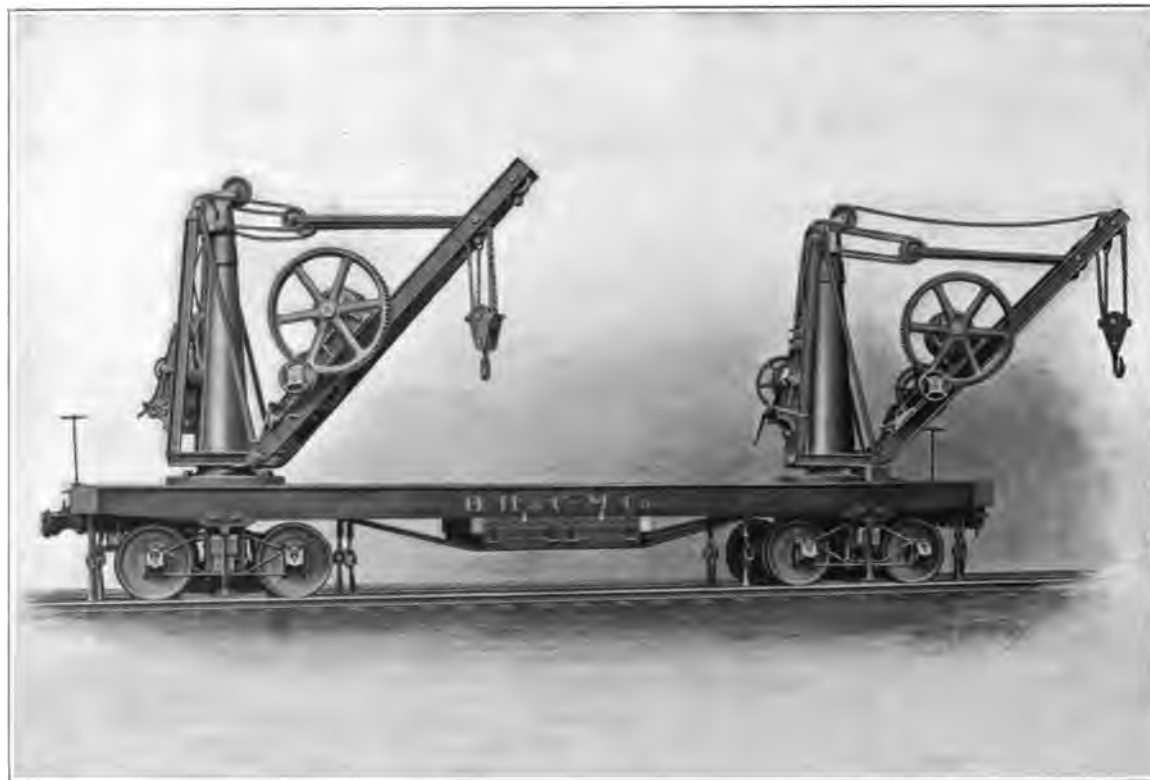
SUITABLE. For railway stations, wrecking cars, docks, etc.



10 TON HAND WRECKING CRANE, VARIABLE RADIUS (MIN. 10 FT., MAX. 15 FT.)

With Whip Hoist.

Code Word, **GELDROLLEN.**



CAR EQUIPPED WITH TWO 10 TON WRECKING CRANES.

Code Word for Car with One Crane, GEHAPERD.

Code Word for Car with Two Cranes, GEHARDER.

Price List of Standard Hand Pillar Cranes.

F. O. B. Cleveland, Ohio.

Prices include Foundation Bolts, Ring and Plans.

Capacity	Radius	Code Word	Weight Pounds	Price	Add for Variable Radius	Add for Rotating Gear	Add for Whip Hoist
2 tons	15 ft.	GEKIBBEL	4,500	\$	None	None	\$
5 tons	15 ft.	GEKICHER	8,000	\$	None	None	\$
10 tons	15 ft.	GEKIPPT	12,500	\$	\$	\$	\$
15 tons	15 ft.	GEKIPPTER	17,000	\$	\$	\$	\$
2 tons	20 ft.	GEKLIRR	6,000	\$	None	None	\$
5 tons	20 ft.	GEKLODDERD	10,500	\$	None	None	\$
10 tons	20 ft.	GEKLONGELD	16,000	\$	\$	\$	\$
15 tons	20 ft.	GEKLONTERD	23,000	\$	\$	\$	\$
20 tons	20 ft.	GEKLOOFD	30,000	\$	\$	\$	\$
25 tons	20 ft.	GEKLOPFD	37,200	\$	\$	\$	\$

Other sizes can be built. Prices on application.

Price List of Standard Hand Wrecking Cranes.

F. O. B. Cleveland, Ohio.

Capacity	Radius	Code Word	Weight Pounds	Price	Add for Variable Radius	Add for Whip Hoist	Add for Rotating Gear
10 tons	15 ft.	GELDROLLEN	13,500	\$	INCLUDED		\$
15 tons	15 ft.	GELDSACHE	15,000	\$			\$
10 tons	20 ft.	GELDZAKKEN	17,000	\$			\$
15 tons	20 ft.	GELDZINS	24,500	\$			\$
20 tons	20 ft.	GELDZINSES	27,500	\$			\$
25 tons	20 ft.	GELDZUCHT	30,700	\$			\$

Other sizes can be built. Prices on application.

Partial List of Users of Pillar and Wrecking Cranes.

UNITED STATES GOVERNMENT	12	Cranes.
PENNSYLVANIA RAILROAD COMPANY	60	"
PHILADELPHIA & READING RAILROAD	5	"
BOSTON & MAINE RAILROAD	3	"
LEHIGH VALLEY RAILROAD	2	"
CHICAGO, BURLINGTON & QUINCY RAILROAD	3	"
BALTIMORE & OHIO RAILROAD	5	"
LAKE SHORE & MICHIGAN SOUTHERN RAILROAD	3	"
UNION PACIFIC RAILROAD	2	"
OLD COLONY RAILROAD	2	"
GEORGES CREEK & CUMBERLAND RAILROAD	2	"
LOUISVILLE & NASHVILLE RAILROAD	2	"
NEW YORK, NEW HAVEN & HARTFORD RAILROAD	5	"
ATCHISON, TOPEKA & SANTA FE RAILROAD	3	"
ERIE RAILROAD	2	"
NORTHERN PACIFIC RAILROAD	3	"
LONG ISLAND RAILROAD	2	"
WABASH RAILROAD	2	"
EDGAR THOMPSON STEEL WORKS, Bessemer, Pa.	3	"
BELLAIRE NAIL WORKS, Bellaire, Ohio	2	"
ALLISON MANUFACTURING COMPANY, Philadelphia, Pa.	3	"
COMP' DE AGENCIES, Guatemala, South America	4	"
RAFAEL ESTRADA, Mantanzas, Cuba	1	"
M. P. SUCRE, Cumana, Ven., South America	1	"
SPANISH AMERICAN IRON COMPANY, Cuba	1	"

The Brown Hoisting Machinery Company, Incorporated.

Hand Truck Cranes.

NOTE: See additional Code Words on page 255.

Hand Truck Cranes.

All inquiries and orders for Hand Truck Cranes should give the following particulars:

1. Capacity, in tons to be lifted; state maximum and average loads and how often lifted.
2. Radius at which maximum load is to be lifted.
3. Gauge of track crane is to run upon.
4. State if radius is wanted fixed or variable.
5. State Crane Catalog, 1903 Edition, if reference is made to pages in this book

Hand Truck Cranes.

HEAVY STEEL TRUCK CARRIAGE, upon which is mounted a rotating platform carrying the superstructure of the crane.

HOISTING GEAR consists of a Standard Crane Winch. (See page 111.)

ROTATING is effected by hand cranks, giving motion in either direction.

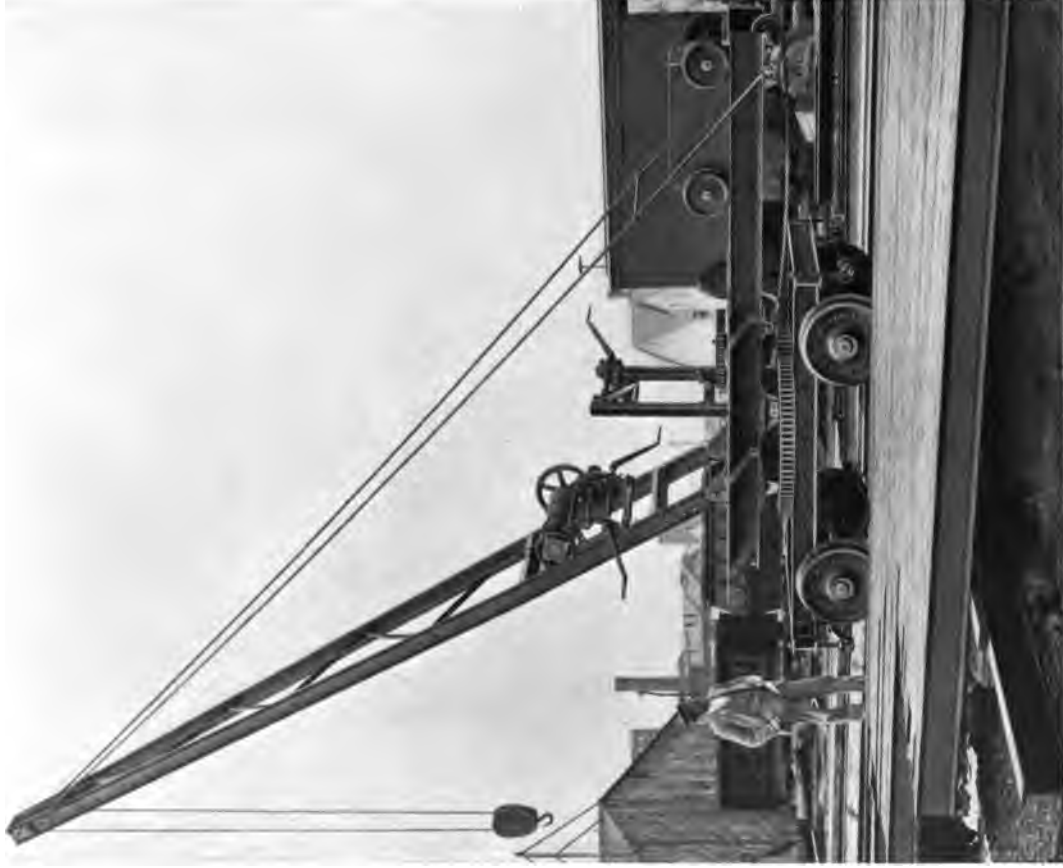
LONGITUDINAL TRAVEL on tracks is effected by pushing on the truck. The truck wheels are of large diameter and the bearings fitted with roller bushings, thus allowing the least possible resistance to travel.

REGULAR SIZES. One to ten tons, and built for any desirable gauge of track.

ADAPTED. For light work in steel works, rolling mills, railway construction, quarries, or wherever suitable tracks are available.



1 TON HAND TRUCK CRANE, 12 FT. RADIUS, STANDARD GAUGE.
Code Word, GESANGVOLL.



2 TON HAND TRUCK CRANE, 12 FT. RADIUS, STANDARD GAUGE.

Rome, Watertown & Ogdensburg Railroad, Watertown, N. Y.

Code Word, GEDOBELD.



8 TON HAND TRUCK CRANE, 12 FT. RADIUS, STANDARD GAUGE.

Brooklyn Wharf & Warehouse Company, Brooklyn, N. Y.

Code Word, GEDULD.

Price List of Standard Hand Truck Cranes.

Standard (4 ft. 8½ in.) Gauge, 12 ft. Radius, with Fixed Booms.

F. O. B. Cleveland, Ohio.

Prices include Track Clamps.

Capacity	Code Word	Weight Pounds	Price	Add for Variable Radius	Remarks
½ ton	GEFRIT	5,000	\$	\$	No rotating gear
1 ton	GEFROREN	7,000	\$	\$	No rotating gear
2 tons	GEFUEGE	8,000	\$	\$	No rotating gear
3 tons	GEFUNKELT	10,000	\$	\$	No rotating gear
4 tons	GEFURCHTER	11,500	\$	\$	With rotating gear
5 tons	GEGADIGDE	15,000	\$	\$	With rotating gear
8 tons	GEGANGEN	29,000	\$	\$	With rotating gear

Other sizes and gauges can be built. Prices on application.

Partial List of Users of Hand Truck Cranes.

BROOKLYN WHARF & WAREHOUSE COMPANY, Brooklyn, N. Y.	1 Crane
ROME, WATERTOWN & OGDENSBURG RAILROAD, Watertown, N. Y.	1 "
UNITED STATES DEPARTMENT OF AGRICULTURE, Washington, D. C.	1 "
S. L. MOORE & SONS, Elizabethport, N. J.	1 "
PENNSYLVANIA STEEL COMPANY, Steelton, Pa.	4 "
EDGAR THOMPSON STEEL WORKS, Bessemer, Pa.	1 "
SIEDEL & HASTINGS, Wilmington, Del.	1 "
PUGET SOUND IRON COMPANY, Irondale, Wash.	1 "
UNITED GAS IMPROVEMENT COMPANY, Philadelphia, Pa.	1 "

The Brown Hoisting Machinery Company, Incorporated.

Overhead Tramrail and Trolleys.

NOTE: For additional Code Words see page 255.

Overhead Tramrail.

All inquiries and orders for Overhead Tramrail should state the following particulars:

1. A plan should be submitted to scale, giving location of curves, switches, turntables, etc., and locating overhead supports; and section, showing elevation of tramrail.
2. Capacity, in pounds to be lifted.
3. Type of trolley wanted, and number of same.
4. State if you wish us to supply the hoisting blocks. (We generally supply the Weston Triplex Block, it being the most efficient.)
5. If complete information is given, as asked for above, we can machine and fit the tramrail so that any ordinary mechanic can erect same.
6. If trolleys only are wanted, give capacity of same, and send a cross section of the I-beam they are to run on. This section should show any obstructions to the passage of trolley wheels, such as bolt or rivet heads, or other fastenings, joints or supports.
7. State Crane Catalog, 1903 Edition, if reference is made to pages in this book.

Overhead Tramrail.

THE RAIL OR TRACK. Consists of standard steel I-beams, which vary in size with the required capacity; the track is secured to the overhead supports, whether wooden or iron, by hangers, which are designed to meet all special requirements, the track being fastened directly to the overhead supports or suspended at any desirable or necessary distance to avoid interference with belting, shafting, piping, etc.

PATENT HANGER BOLTS. Are used for securing the tramrail to the overhead supports or hangers, these bolts being held in the track beams by steel keys so made as not to interfere with the trolley wheels, which are of as large diameter as the size of the I-beam will allow.

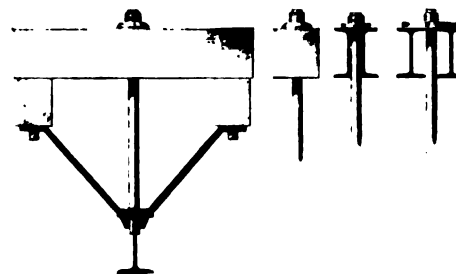
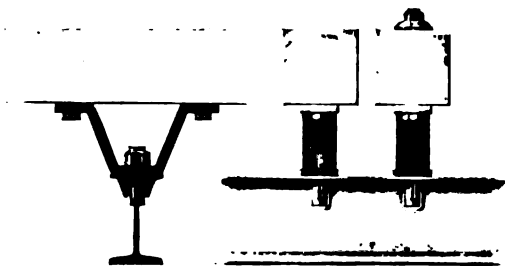
CONNECTION. Between separate lines of tracks is effected by means of switches (single or double) and turn tables; these are fitted with automatic safety stops and locks, making it impossible for the trolleys to run off the beams, and thereby protecting the operator and the load against accident.

CAPACITY. Standard overhead tramrails are designed for carrying loads up to ten tons, special designs being submitted for heavier loads.

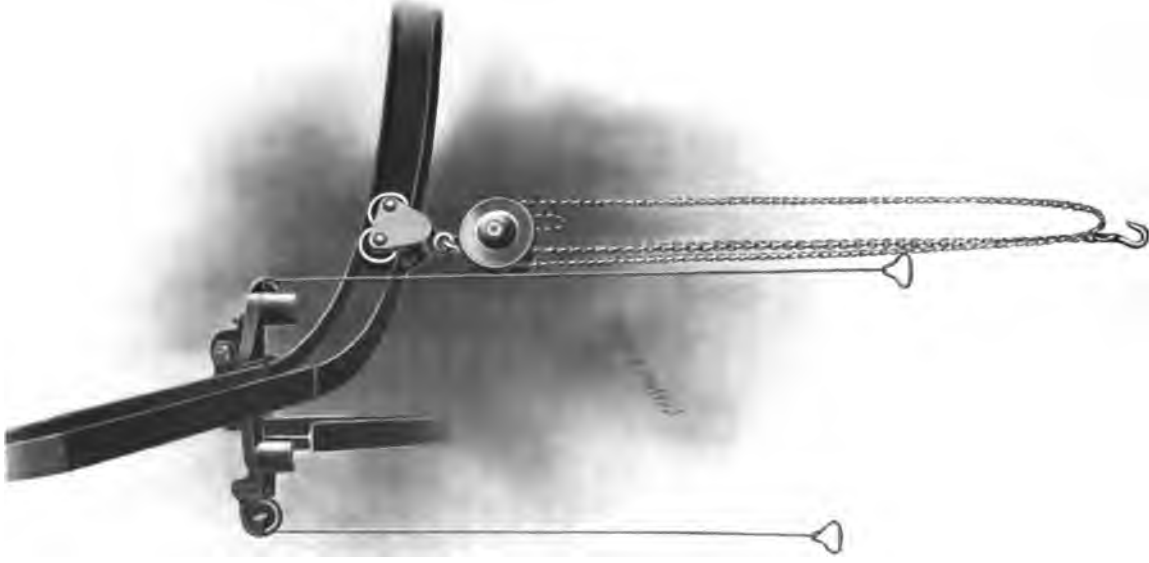
ADAPTED. For use in foundries, machine shops, storehouses, gun emplacements, ammunition houses, etc.



OVERHEAD TRAMRAIL.
Showing Patent Hanger Bolt.
Code Word for Hanger Bolt, **FUSIONASES.**



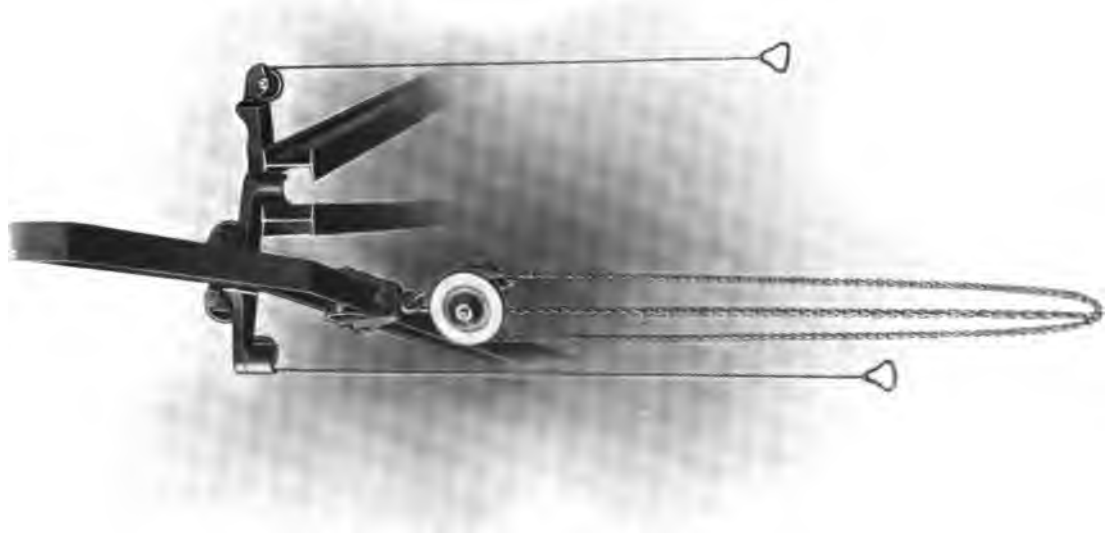
OVERHEAD TRAMRAIL.
 Showing Patent Drop Hangers.
 For use with Wooden or Iron Overhead Supports.



OVERHEAD TRAMRAIL.

Single Switch.

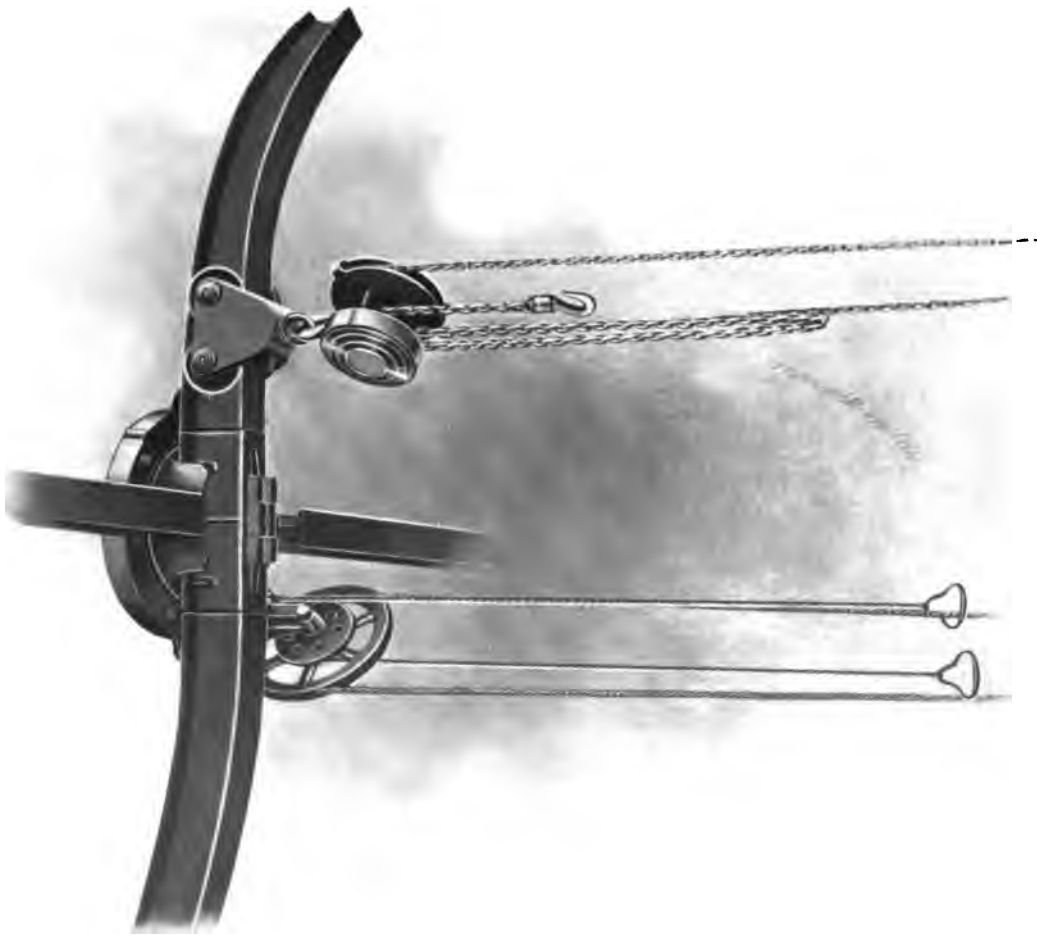
For Code Words, see page 205.



OVERHEAD TRAMRAIL.

Double Switch. .

For Code Words, see page 203.



OVERHEAD TRAMRAIL.

Turn Table.

For Code Words, see page 205.

Price List of Tramrail and Attachments.

Prices F. O. B. Cleveland, Ohio.

Capacity (tons).	Size I-beam.	Maximum Distance between Supports.	Rail (per foot).	Curves (each).	Key Bolts, with Key, Nut and Washer. 12 inches long.	For each 3 inches additional add	"V" Hangers, with Lag Screws and Key Bolt. 12-inch drop.	For each 3 inches additional add	C. I. Hangers, with Clip Bolts and Black Bolts. 12-inch drop.	For each 3 inches additional add	Steel Joints, complete.	Single Switches, complete with Chains.	Double Switches, complete with Chains.	Turn Table, complete with Chains.
½	5"	14'	\$	\$	\$	\$	\$	\$	\$	\$	Fussgang \$	Furculaire \$	Furfavamo \$	Furchig \$
1	6"	13'	\$	\$	\$	\$	\$	\$	\$	\$	Fussgelenk \$	Furcularum \$	Furfavate \$	Furchiger \$
1½	7"	13'	\$	\$	\$	\$	\$	\$	\$	\$	Fussgicht \$	Furculis \$	Furferanno \$	Furchtbar \$
2	8"	13'	\$	\$	\$	\$	\$	\$	\$	\$	Fussglas \$	Furculosae \$	Furferebbe \$	Furchtsam \$
3	9"	13'	\$	\$	\$	\$	\$	\$	\$	\$	Fusshammer \$	Furculosis \$	Furferemo \$	Furcifere \$
4	10"	13'	\$	\$	\$	\$	\$	\$	\$	\$	Fusshorn \$	Furculosum \$	Furferesti \$	Furciferos \$
5	12"	15'	\$	\$	\$	\$	\$	\$	\$	\$	Fussily \$	Furdles \$	Furfero \$	Furciferum \$
6	15"	18'	\$	\$	\$	\$	\$	\$	\$	\$	Fusskalt \$	Furentum \$	Furfuraria \$	Furcilabre \$
8	20"	25'	\$	\$	\$	\$	\$	\$	\$	\$	Fusskette \$	Furentibus \$	Furturem \$	Furcillabo \$
10	24"	27' 6"	\$	\$	\$	\$	\$	\$	\$	\$	Fussknecht \$	Furentis \$	Furfureos \$	Furcillam \$

Trolleys. Brown's Patent.



TROLLEY.
End View.

STEEL PLATE TROLLEYS. Frame of wrought iron or steel plates, with inner bearing plates securely bolted to outside plates. The wheels are secured to steel pins revolving in adjustable bearings, giving an inside as well as an outside support to the wheels, thereby reducing very materially the resistance to movement along the overhead beam. These bearings are self-oiling and are equipped with proper receptacles for holding a six months' supply.

In these trolleys the wheels are of maximum diameter, this diameter being almost as much as the depth of the I-beam. This allows larger wearing parts, and reduces resistance, but is allowable only with our special form of hanger bolt. We can furnish trolleys with smaller diameter wheels, where necessary. We can also furnish the larger sizes with hand power moving gear.

We can also furnish these trolleys to run on a flat rail system.



STEEL PLATE TROLLEY. BROWN'S PATENT.

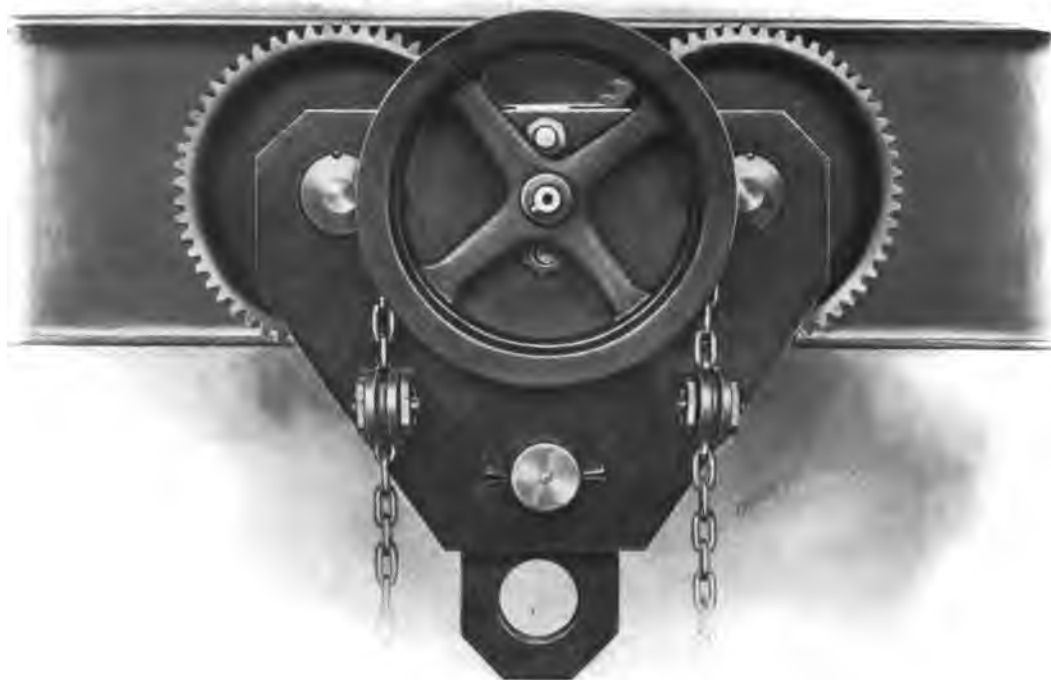
With Self-oiling Bearings.
For Code Word, see page 214.



4 TON STEEL PLATE TROLLEY, WITH TRIPLEX BLOCK. 10 INCH I-BEAM.

For Reduced Clearance.

Code Words for Trolley, GARPPANNE-GARNIZOEN.



STEEL PLATE TROLLEY. BROWN'S PATENT.

Geared.

For Code Words, see page 214.



STEEL PLATE TROLLEY. BROWN'S PATENT.

With Triplex Block. Clevis connection. As furnished the United States Engineers in large quantities for handling ammunition in fortifications.

Made in $\frac{1}{2}$ ton and 1 ton sizes.

Code Word, $\frac{1}{2}$ Ton, 5 inch Beam, GARANGAN.

Code Word, 1 Ton, 6 inch Beam, GARAPIROCA.



STEEL PLATE TROLLEY. MINIMUM CLEARANCE. ARMY TYPE. BROWN'S PATENT.

With Triplex Block built in.

Made expressly for the United States Engineers for handling ammunition in fortifications.

Made in $\frac{1}{2}$ ton and 1 ton sizes.

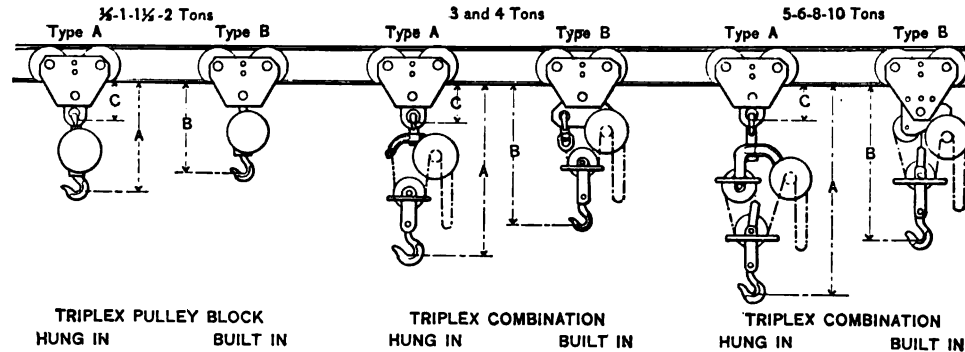
Code Word for $\frac{1}{2}$ Ton, 5 inch Beam, GARANTENDO.

Code Word for 1 Ton, 6 inch Beam, GARATORUM.



STEEL PLATE TROLLEY. MINIMUM CLEARANCE. NAVY TYPE. BROWN'S PATENT.
Designed for U. S. Navy for handling ammunition, torpedoes, etc., aboard ship. U. S. battleships
"Kearsarge" and "Kentucky" have this equipment throughout.

Hook Clearances, etc., Brown's Patent Steel Plate Trolleys with Triplex Pulley Blocks.



	1/2 ton	1 ton	1 1/2 tons	2 tons	3 tons	4 tons	5 tons	6 tons	8 tons	10 tons
Capacity.....	1/2 ton	1 ton	1 1/2 tons	2 tons	3 tons	4 tons	5 tons	6 tons	8 tons	10 tons
Size of I-beam.....	5" 9 3/4 lb.	6" 12 1/4 lb.	7" 15 lb.	8" 18 lb.	9" 21 lb.	10" 25 lb.	12" 31 1/4 lb.	15" 42 lb.	20" 65 lb.	24" 80 lb.
Diameter of wheel....	4"	5"	6"	7"	8"	9"	10 1/2"	13"	18"	22"
Dimension "A".....	19 3/8"	22 3/8"	26 3/4"	31 3/4"	40"	45 1/8"	55"	56"		
" "B".....	13"	17"	20"	21"	33 3/4"	38"	40 1/2"	40 1/2"	48"	48"
" "C".....	4 3/8"	5 3/8"	6 3/4"	7 3/4"	7 3/8"	8 1/8"	10"	11"		
Radius of smallest curve.....	21"	27"	32"	36"	42"	48"	54"	66"	84"	99"
Plain Trolley										
Direct pull required to move same.....	26 lbs.	47 lbs.	65 lbs.	74 lbs.	106 lbs.	138 lbs.	161 lbs.	156 lbs.	189 lbs.	213 lbs.
Geared Trolley										
Chain pull required to move same.....					33 lbs.	40 lbs.	29.5 lbs.	27.5 lbs.	40 lbs.	54 lbs.
Geared Trolley										
Feet of chain to move same 1 foot.....					4.96	4.94	4.63	4.55	4.25	4.15

Price List of Brown's Patent Steel Plate Trolleys, Standard Sizes.

Prices F. O. B. Cleveland, Ohio.

Size of I-beam		4"	5"	6"	7"	8"	9"	10"	12"	15"	20"	24"
Weight of I-beam, per ft.		7½ lbs.	9¾ lbs.	12¼ lbs.	15 lbs.	18 lbs.	21 lbs.	25 lbs.	31½ lbs.	42 lbs.	65 lbs.	80 lbs.
Plain Trolleys, Page 207.	¼ Ton Capacity.	40	\$	\$	\$	\$	\$	\$	\$	\$	\$	\$
	½ Ton "	50	\$	\$	\$	\$	\$	\$	\$	\$	\$	\$
	1 Ton "	75	\$	\$	\$	\$	\$	\$	\$	\$	\$	\$
	1½ Ton "	100	\$	\$	\$	\$	\$	\$	\$	\$	\$	\$
	2 Tons "	125	\$	\$	\$	\$	\$	\$	\$	\$	\$	\$
	3 Tons "	175	\$	\$	\$	\$	\$	\$	\$	\$	\$	\$
	4 Tons "	300	\$	\$	\$	\$	\$	\$	\$	\$	\$	\$
	5 Tons "	400	\$	\$	\$	\$	\$	\$	\$	\$	\$	\$
	6 Tons "	500	\$	\$	\$	\$	\$	\$	\$	\$	\$	\$
	8 Tons "	700	\$	\$	\$	\$	\$	\$	\$	\$	\$	\$
	10 Tons "	1000	\$	\$	\$	\$	\$	\$	\$	\$	\$	\$
Geared Trolleys, Page 208.	1 Ton Capacity.	100	\$	\$	\$	\$	\$	\$	\$	\$	\$	\$
	1½ Ton "	125	\$	\$	\$	\$	\$	\$	\$	\$	\$	\$
	2 Tons "	150	\$	\$	\$	\$	\$	\$	\$	\$	\$	\$
	3 Tons "	200	\$	\$	\$	\$	\$	\$	\$	\$	\$	\$
	4 Tons "	350	\$	\$	\$	\$	\$	\$	\$	\$	\$	\$
	5 Tons "	450	\$	\$	\$	\$	\$	\$	\$	\$	\$	\$
	6 Tons "	550	\$	\$	\$	\$	\$	\$	\$	\$	\$	\$
	8 Tons "	800	\$	\$	\$	\$	\$	\$	\$	\$	\$	\$
	10 Tons "	1350	\$	\$	\$	\$	\$	\$	\$	\$	\$	\$

Add the Code Word, GARNISSIEZ, to any of the above Code Words to indicate Geared Trolley.

Price List Minimum Clearance Combination Trolleys and Blocks (Army Type).

Page 211.

F. O. B. Cleveland, Ohio.

Capacity.	Extreme Width.	Weight.	Dimension H See page 213.	Size I-beam.	Hoist.	Price.	Extra Hoist Price per Ft.	Code Word.
½ Ton	12¾"	105 lbs.	7½"	5" 9¾ lbs.	8 ft.	\$	\$	GARANTENDO
1 Ton	14 "	168 lbs.	9½"	6" 12¼ lbs.	8 ft.	\$	\$	GARATORUM

Price List Minimum Clearance Combination Trolleys and Blocks (Navy Type).

Page 212.

½ Ton	12¼"	120 lbs.	7½"	5" 9¾ lbs.	8 ft.	\$	\$	FUMANDO
1 Ton	14 "	183 lbs.	9½"	6" 12¼ lbs.	8 ft.	\$	\$	FUMAR

Price List with Quick Speed Triplex Blocks.

Either of the above Trolleys can be furnished with Quick Speed Triplex Blocks of ¼ or ½ ton capacity as follows :

	Price.		Code Word.	
	Army Type.	Navy Type.	Army Type.	Navy Type.
¼ Ton Quick Speed, same dimensions and price as ½ ton capacity above }	\$	\$	FULVIASTRI	FUMERIEZ
½ Ton Quick Speed, same dimensions and price as 1 ton capacity above }	\$	\$	FULVIORUM	FUMERONS

We are prepared to submit designs and prices on Special Trolleys for any work.

Steel Plate Trolleys for Flat Bar Rail.

BROWN'S PATENT.



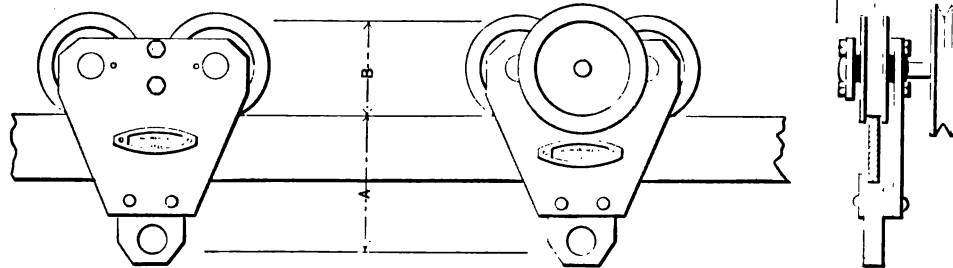
The picture shows a Flat Rail Trolley of our patented construction, with single steel side plate and inner bearing plate supporting the wheels on both sides. The wheels have tight axles revolving in self-oiling adjustable bearings, carrying a six months' supply of oil.

They represent the cheapest form of trolley and are very efficient.

For Code Words, see page 217.

Hook Clearances, Prices, etc.

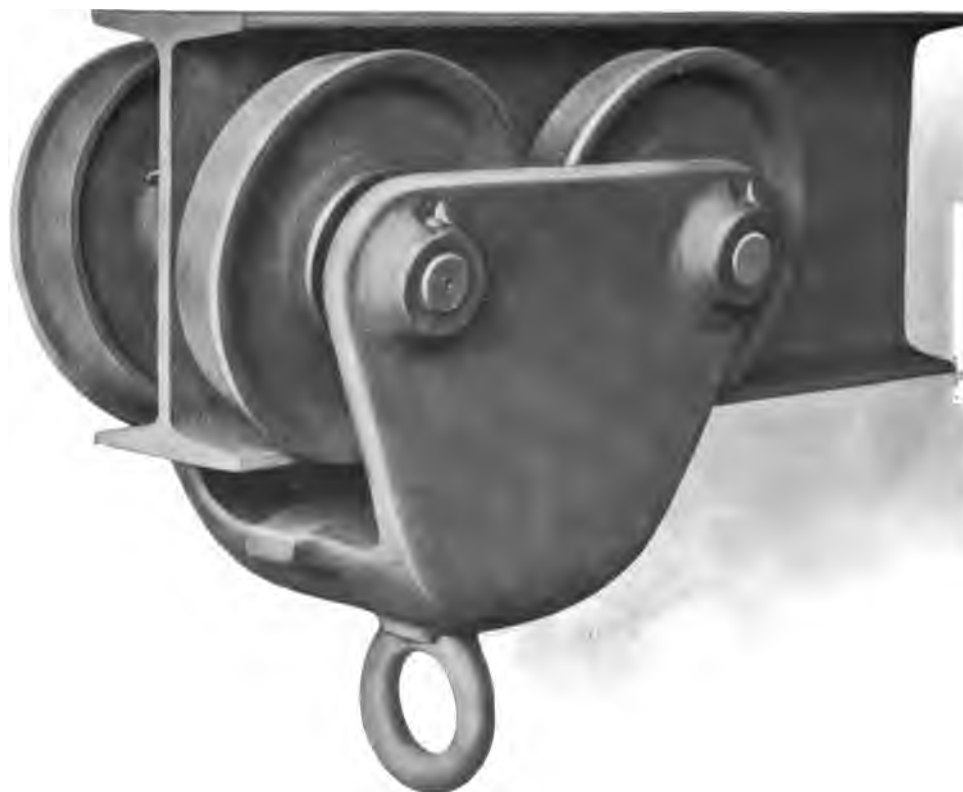
Trolleys for Flat Rail.



Prices F. O. B. Cleveland, Ohio.

Capacity.	Size of Rail.	Weight.	Greatest Distance between Hangers.	PLAIN.				GEARED.				PRICE.		Code Word. Plain Trolley.
				A.	B.	C.	D.	A.	B.	C.	D.	Plain.	Geared.	
¼ ton.	3" x ½"	.....	7 ft.	8 "	5 ½"	1 ¾"	2 "	8 "	9 "	1 ¾"	3 ½"	\$.....	\$.....	GARGARORUM
½ "	3" x ½"	.....	6 ft.	8 "	5 ½"	1 ¾"	2 "	8 "	9 "	1 ¾"	3 ½"	\$.....	\$.....	GARGAROZZO
1 "	4" x ¾"	.....	6 ft.	9 ½"	6 ½"	2 "	2 ½"	9 ½"	9 ½"	2 "	4 "	\$.....	\$.....	GARGAUBA
1 ½ "	4" x ¾"	.....	5 ft.	9 ½"	6 ½"	2 "	2 ½"	9 ½"	9 ½"	2 "	4 "	\$.....	\$.....	GARGILIANO
2 "	4" x ¾"	.....	4 ft.	9 ½"	6 ½"	2 "	2 ½"	9 ½"	9 ½"	2 "	4 "	\$.....	\$.....	GARGOIL
3 "	6" x 1"	.....	6 ft.	13 "	9 "	3 "	4 "	13 "	12 "	3 "	6 "	\$.....	\$.....	GARGOLA
4 "	6" x 1"	.....	5 ft.	13 "	9 "	3 "	4 "	13 "	12 "	3 "	6 "	\$.....	\$.....	GARGOTAGE

Add the Code Word **GARNISSIEZ** to any of the above Code Words to indicate Geared Trolley.



STANDARD CAST IRON TROLLEY.

For Code Word, see page 219.

Cast Iron Trolleys.

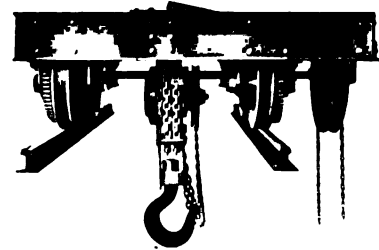
These can only be used on the Standard I-beam of the weight specified. The dimension "C" is about the same as for the Steel Plate Trolleys shown on page 213.

Capacity in Tons.	With Plain Bearings.						With Roller Bearings.		
	Size of I-beam.	Price.	Code Word.	Size of I-beam.	Price.	Code Word.	Size of I-beam.	Price.	Code Word.
½	5'-9¾ lb	\$.....	Funeravate	7'-15 lb.	\$.....	Funerepis	6'-12¼ lb.	\$.....	Fungible
1	6'-12¼ lb.	\$.....	Funereal	9'-21 lb.	\$.....	Funerepum	7'-15 lb.	\$.....	Fungico
1½	7'-15 lb.	\$.....	Funereorum	.....	\$.....	.....	8'-18 lb.	\$.....	Fungiform
2	7'-15 lb.	\$.....	Funereos	8'-18 lb.	\$.....	Funerate	9'-21 lb.	\$.....	Fungina
3	.....	\$.....	.....	.....	\$.....	.....	.....	.....	.....

Greatest Safe Distance in Feet between Supports for Steel I-beams. Standard Light Sections.

Size of I-beam	Load on Trolley in Tons for Single I-beams Without Joints.											
	¼	½	1	1½	2	3	4	5	6	7	8	10
4"	14'											
5"	16'	14'										
6"	18'	17'	13'									
7"	24'	23'	18'	15'								
8"	26'	24'	20'	17'	15'							
9"	.....	.....	24'	20'	18'	14'						
10"	.....	.....	27'	24'	21'	17'	14'	12'				
12"	.....	.....	.....	30'	26'	22'	19'	17'	15'	13'		
15"	.....	.....	.....	.....	32'	27'	24'	22'	19'	17'	16'	
20"	.....	.....	.....	.....	.....	.....	.....	.....	33'	31'	30'	26'
24"	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	37'	33'

Crane Trolleys.



For running on top of two I-beams or rails. With Triplex Block built in.

These trolleys, shown in the pictures above, have frame built up of steel shapes, with four truck wheels fast on their axles running in self-adjustable roller bearings on both sides of wheel. These roller bearings run in steel bushings. Double flanged truck wheel for standard T rail sections, or special wheels for I sections, will be furnished.

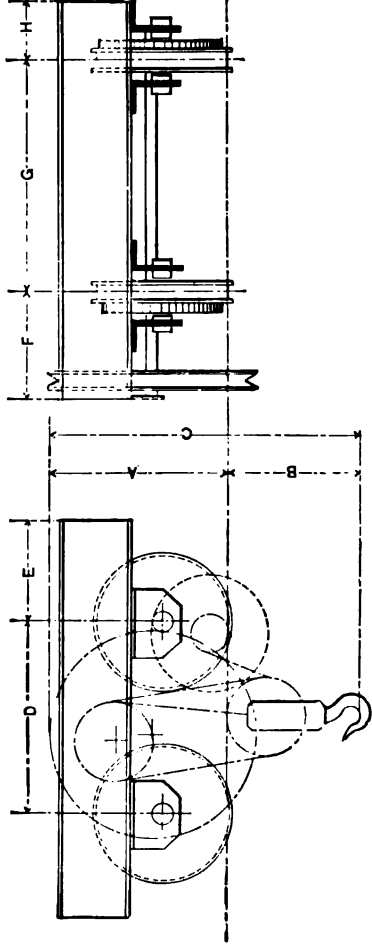
Hoisting and trolley travel are by pendent chains hanging to the floor.

Adapted for use on traveling, jib, bridge or other kinds of cranes.

For Code Words, see page 221.

Hook Clearances, etc., of Crane Trolleys.

With Triplex Pulley Block built in.

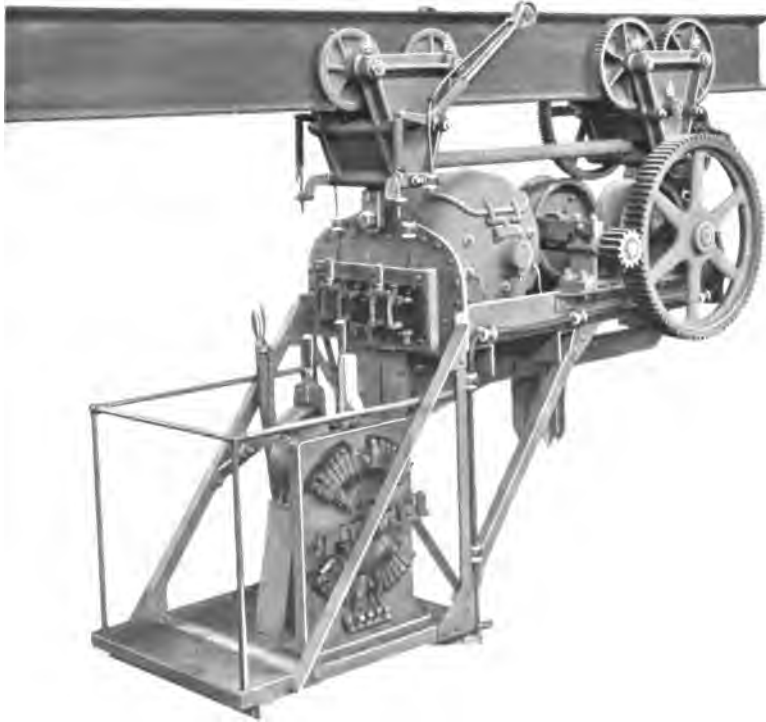


Capacity.	Size of T rail.	Chain Pull necessary to move Trolley. Full Load.	Feet of Chain to move Same 1 Foot.	Wheel Diameter.	A.	B.	C.	D.	E.	F.	G.	H.
1 ton	2 1/4" 16 lbs.	8.7 lbs.	2.7	10"	12 3/4"	8 -	20 -	16"	8 -	7 1/2"	24"	1 1/2"
2 "	2 1/2" 16 "	15.2 "	2.7	12"	13 "	9 3/4"	22 1/2"	18"	10 -	12 -	28"	4 1/2"
3 "	2 3/4" 16 "	13.2 "	3.8	12"	13 "	18 -	31 -	30"	10 -	13 -	28"	5 -
4 "	2 1/2" 16 "	17.4 "	3.8	12"	13 "	21 -	34 -	30"	10 -	13 -	28"	5 -
5 "	2 1/2" 20 "	18.8 "	3.9	14"	18 -	25 -	43 -	28"	11 -	16 -	28"	6 -
6 "	2 1/2" 20 "	22.3 "	3.9	14"	18 -	25 -	43 -	28"	11 -	16 -	28"	6 -
8 "	2 3/4" 25 "	25.4 "	3.9	16"	22 1/2"	21 -	43 1/2"	24"	13 1/2"	20 -	30"	7 -
10 "	2 3/4" 25 "	25.4 "	3.9	16"	22 1/2"	23 -	45 1/2"	24"	13 1/2"	20 -	30"	7 -
15 "	3 " 30 "	45.0 "	6.0	18"	25 -	31 -	56 -	24"	18 -	20 -	42"	7 -
20 "	3 " 30 "	60.0 "	6.0	18"	25 -	39 -	64 -	24"	18 -	20 -	42"	7 -

Price List of Crane Trolleys.

F. O. B. Cleveland, Ohio.

Capacity.	Weight.	PRICE.		Standard Hoist.	Price of Extra Hoist per Ft.	CODE WORD.	
		With Triplex Block.	Without Triplex Block.			With Triplex Block.	Without Triplex Block.
1 ton	600 lbs.	\$.....	\$.....	8 ft.	\$.....	Garthness	Garment
2 "	800 "	\$.....	\$.....	9 "	\$.....	Garteros	Garnering
3 "	1000 "	\$.....	\$.....	10 "	\$.....	Garles	Garfarbon
4 "	1300 "	\$.....	\$.....	10 "	\$.....	Garwald	Garngabel
5 "	1400 "	\$.....	\$.....	12 "	\$.....	Garzim	Garhaspel
6 "	1600 "	\$.....	\$.....	12 "	\$.....	Garkecht	Garleron
8 "	2000 "	\$.....	\$.....	12 "	\$.....	Gartern	Garlmento
10 "	2200 "	\$.....	\$.....	12 "	\$.....	Gartern	Garlmes
15 "	3100 "	\$.....	\$.....	12 "	\$.....	Garlicky	Garlrez
20 "	3500 "	\$.....	\$.....	12 "	\$.....	Garlndeus	Garlfront



Electric Power Trolley.

The picture on this page shows an electric trolley, built in sizes of 1 to 5 tons capacity. This trolley runs on lower flange of I-beam and is suspended from eight wheels, four of which are driven. It has swivel trucks, and the 5 ton size will round a 16 foot radius curve. One electric motor for each motion of hoisting and trolleying. The operator rides with trolley and through suitable levers controls the various functions. Current is taken from overhead wires by means of two underrunning trolleys. Speed along runway, from 200 to 500 feet a minute. Hoisting, from 10 to 50 feet a minute.

The system of runway can be built extending from one building to another, and covering all the principal buildings around any large manufacturing plant, with curves, switches, etc., and with this type of trolley, material or manufactured product can be quickly moved from one building to another, and any number of such trolleys can be used.

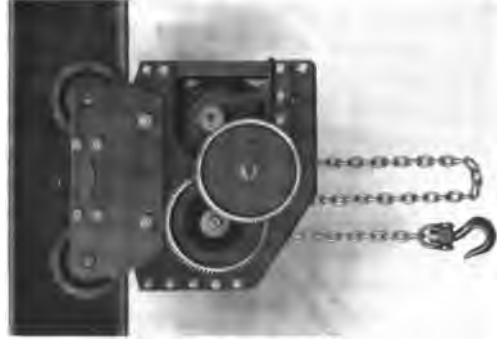
Prices on application.

Code Word, FULFIL.

Electric Power Trolleys.

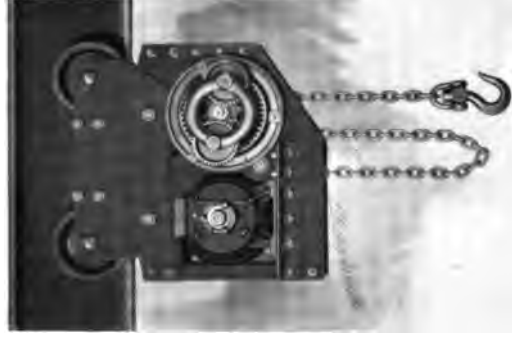
The upper picture illustrates the Brown Electric Hoist and Trolley for use on single I-beam track. Gear case is removed showing hoisting mechanism. This trolley is furnished with electric hoisting only, or with both electric hoisting and trolley traveling equipment. In the latter case independent motors are used.

Current may be obtained by means of flexible cable, overhead wire or conductor bars at-



TROLLEY WITH ELECTRIC HOIST.

speed 3 to 12 feet per minute, with full load depending on the capacity of the trolley.



TROLLEY WITH ELECTRIC HOIST.

tached to underside of beam, as desired. Controllers are either attached to trolley and operated by pendent chains, or located at some convenient point in building.

Lower picture is same as above, showing view of other side of trolley and gears from motor to hoisting mechanism. Hoisting

Price List of Brown's Electric Trolleys.

F. O. B. Cleveland, Ohio.

Capacity in Tons	Electric Hoisting only.		Electric Hoisting and Trolley Travel.		Standard Hoist Feet.	Code Word.	
	Weight in Pounds.	Price	Weight in Pounds.	Price.		Electric Hoisting only.	Electric Hoist- ing and Trol- ley Travel.
1	850	\$.....	1175	\$.....	8	Frenatoris	Frendivano
2	960	.....	1350	.....	9	Frenatorum	Frendores
3	1150	.....	1550	.....	10	Frenatos	Frenello
4	1250	.....	1650	.....	10	Frenatrice	Frenetique
5	1600	.....	2100	.....	12	Frenaturam	Freniamoci

Partial List of Users of Overhead Tramrails and Trolleys.

UNITED STATES: UNITED STATES ARMY AND NAVY, various fortifications and battleships.
 NATIONAL TUBE WORKS, Chicago, Ill.
 AMERICAN RADIATOR COMPANY, Buffalo, N. Y.
 AMERICAN STEEL AND WIRE COMPANY, Worcester, Mass.
 CAMBRIA STEEL CO., Johnstown, Pa.
 R. HOE & COMPANY, New York.
 INTERNATIONAL PAPER COMPANY, Niagara Falls, N. Y.
 NEW YORK *World*, New York, N. Y.
 BOSTON *Globe* PUBLISHING CO., Boston, Mass.
 NEW YORK EDISON CO., New York, N. Y.
 RAND DRILL COMPANY, North Tarrytown, N. Y.
 PINTSCH COMPRESSING CO., Jersey City, N. J.
 NEW YORK SHIPBUILDING CO., Camden, N. J.
 GENERAL ELECTRIC CO., Lynn, Mass.
 LINK BELT ENGINEERING CO., Philadelphia, Pa.
 PITTSBURG PLATE GLASS COMPANY, Ford City, Pa.
 MARYLAND STEEL COMPANY, Sparrows Point, Md.
 MIDVALE STEEL CO., Philadelphia, Pa.
 YALE & TOWNE MANUFACTURING COMPANY, New York.
 P. & F. CORBIN, New Britain, Conn.
 PENNSYLVANIA RAILROAD, Altoona, Pa.
 SPRAGUE ELECTRIC CO., Bloomfield, N. J.
 ENGLAND: LLOYD & LLOYD, Birmingham.
 COOMBS WOOD TUBE WORKS, Halesowen.
 NILES TOOL WORKS, London.
 G. N. HADEN & SONS, Trowbridge.
 BRITISH-THOMPSON-HOUSTON CO., Rugby.
 THE FAIRBANKS CO., London.
 MULLINERS' LTD., Coventry.
 AUSTRIA: ALPINE MONTANGESELLSCHAFT, Vienna.
 SWEDEN: GRAHAM BROTHERS, Stockholm.
 HOLLAND: HAARLEMSCHE MACHINEFABRIK, Haarlem.
 SPAIN: T. ALEXANDER & CO., Barcelona.
 JAPAN: DECATUR & CO., Yokohama.
 SIBERIA: CHINESE EASTERN RAILWAY, Vladivostok.
 SOUTH AFRICA: W. & G. SCOTT, Cape Town.
 MILLIKEN BROTHERS, Cape Town.

The Brown Hoisting Machinery Company, Incorporated.

Safety Crabs and Winches.

Weston's Patent.

NOTE: See additional Code Words on page 255.

Crabs and Winches.

All inquiries and orders for Crabs or Winches should state the following particulars:

1. Capacity, in pounds to be lifted, stating maximum and average loads and how often lifted.
2. Number of parts of rope to be used in lifting this load.
3. Length of barrel.
4. State if strap brake is wanted.
5. State if single or double pole winch is wanted.
6. State if straight or capstan barrel is wanted.
7. State Crane Catalog, 1903 Edition, if reference is made to pages in this book.

Crabs and Winches. Weston's Patent.

COMMERCIAL CRAB. Cast iron frame, fitted with straight or capstan barrel for receiving rope or chain.

HOISTING. Two speeds, effected by cranks or sprocket wheel for hand rope or chain.

LOWERING. Effected by turning cranks backward; controlled by Weston Safety Lowering Device, the motion ceasing when the cranks are released.

STRAP BRAKE. Furnished for rapid lowering when specially ordered.

CAPACITY. One-half to two and one-half tons direct pull on barrel.

COMMERCIAL WINCH. Cast iron side frames, fitted with straight or capstan barrel for receiving rope or chain, and furnished for double or single pole as desired.

HOISTING. Effected by cranks and arranged for two speeds for all sizes over one-half ton.

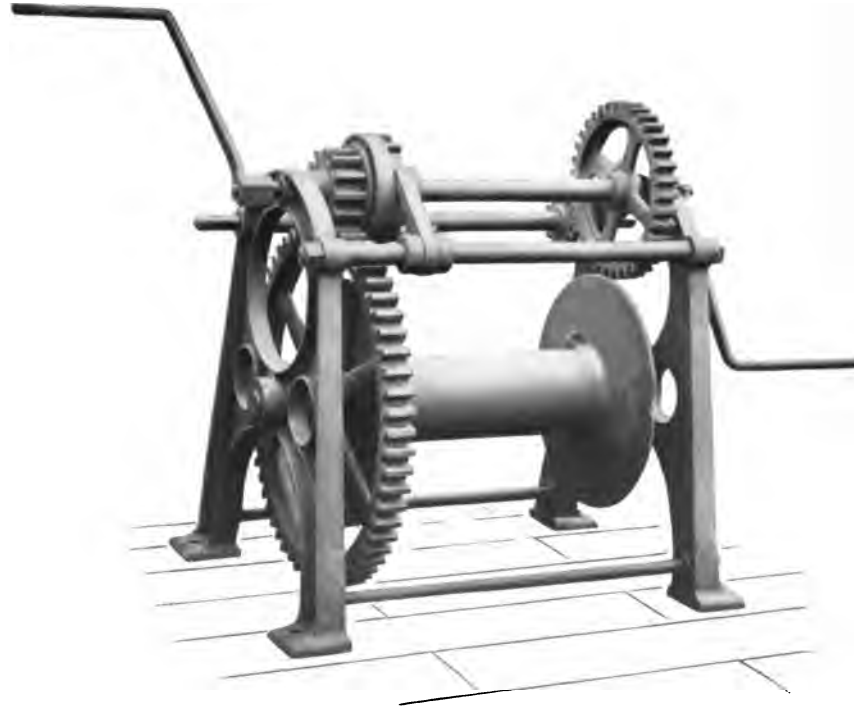
LOWERING. Controlled by Weston Safety Lowering Device, effected by turning cranks backward, the motion ceasing when the cranks are released.

STRAP BRAKE. Furnished for rapid lowering when specially ordered.

CAPACITY. One-half to two and one-half tons direct pull on the barrel.

SAFETY. The construction of the mechanism is such that the load is always self sustained and is incapable of running down, so that flying back of the handles is prevented, and the safety of the operator and load is at all times assured.

We have thousands of these Crabs and Winches in use in all parts of the world.



STANDARD COMMERCIAL CRAB.

The load cannot drop. The handles cannot fly back.

For Code Words, see page 232.



STANDARD COMMERCIAL CRAB.

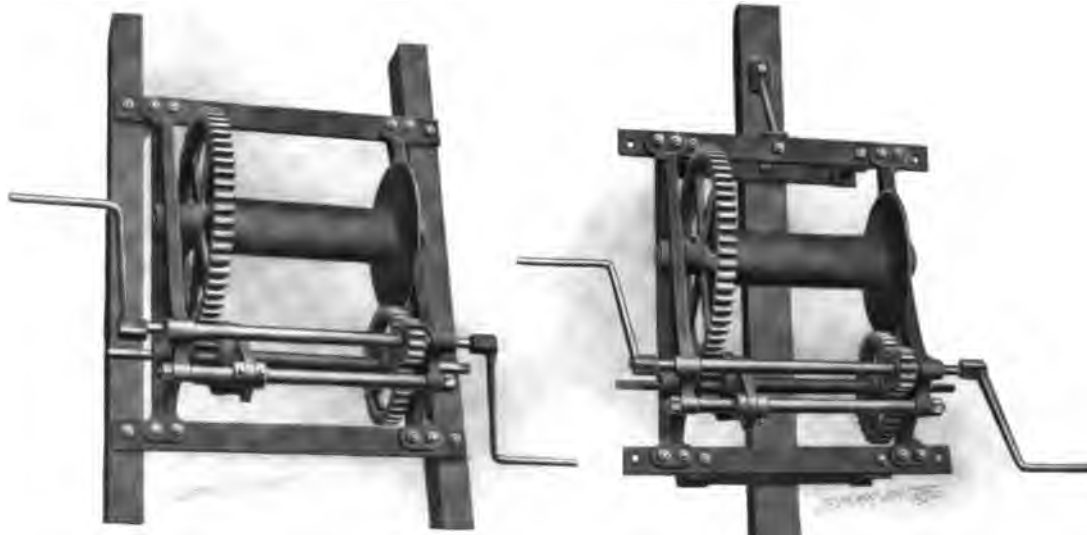
End View. With Strap Brake.
For Code Words, see page 232.



STANDARD COMMERCIAL CRAB.

With Strap Brake, Large Diameter Drum, and Capstan Head.

We have thousands of these Crabs and Winches in use in all parts of the world.



DOUBLE POLE.

SINGLE POLE.

STANDARD COMMERCIAL WINCH.

The load cannot drop. The handles cannot fly back.

For Code Words, see page 232.

Price List Standard Crabs.

Code Word.	Number of Crab.	Standard Barrels.		Capacity Direct Hoist.	Speeds.	Price F. O. B. Cleveland.	Add for each additional six inches in length of barrel.	Add for Strap Brake.	Weight Standard Crab.
		Diameter.	Length.						
Gasparin	21	4 ½"	12'	½ ton	One	\$	\$	None	226 lbs.
Gassoul	22	5 "	16'	1 ton	Two	\$	\$	\$	374 lbs.
Gasteripe	23	6 "	20'	1 ½ ton	Two	\$	\$	\$	524 lbs.
Gastricism	25	7 "	24'	2 ½ ton	Two	\$	\$	\$	812 lbs.
Gasttisch	Strap Brake			Not used on No. 21					
Gastvogel	Capstan Barrel			Same price as Straight Barrel					

Price List Standard Winches.

Code Word.	Number of Winch.	Standard Barrels.		Capacity Direct Hoist.	Speeds.	Price F. O. B. Cleveland. Double Pole.	Add for each additional six inches in length of barrel.	Add for Strap Brake.	Weight Standard Winch.
		Diameter.	Length.						
Gaterais	31	4 ½"	12'	½ ton	One	\$	\$	None	215 lbs.
Gatterstab	32	5 "	16'	1 ton	Two	\$	\$	\$	412 lbs.
Gaucourte	33	6 "	20'	1 ½ ton	Two	\$	\$	\$	580 lbs.
Gaudiosa	35	7 "	24'	2 ½ ton	Two	\$	\$	\$	864 lbs.
Gaultheria	Single Pole Winch			\$7 additional to above price					
Gaumen	Strap Brake			Not used on No. 31					
Gaumenbein	Capstan Barrel			Same price as Straight Barrel					

The Brown Hoisting Machinery Company, Incorporated.

Railroad Transfer Tables.

NOTE: See additional Code Words on page 255.

Transfer Tables.

All inquiries and orders for Transfer Tables should state the following particulars :

1. Capacity, in tons to be transferred.
2. Length of table.
3. Gauge of track, on table, and under table.
4. Wheel base of load on table, together with maximum wheel loads.
5. Power to be used.
6. It is necessary for us to have a full plan and cross-section of pit, in order to make estimate for transfer table.
7. State Crane Catalog, 1903 Edition, if reference is made to pages in this book.



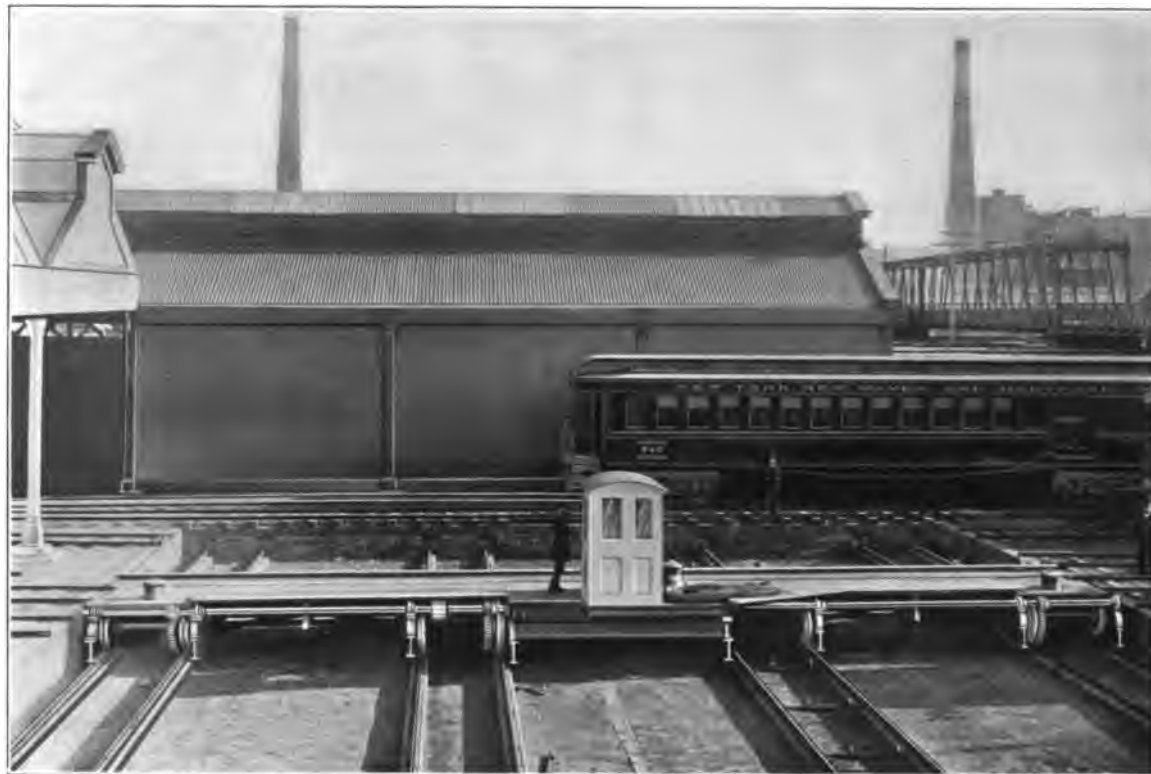
107 TON STEAM TRANSFER TABLE.

Long Island Railroad, Morris Park, L. I.

Code Word, GEWITER.



50 TON ELECTRIC TRANSFER TABLE.
New York Central & Hudson River Railroad, New York.
Code Word, GEWITZIGT.



50 TON ELECTRIC TRANSFER TABLE.
New York Central & Hudson River Railroad.
Code Word, GEWITZIGT.

Partial List of Users of Transfer Tables.

NEW YORK CENTRAL & HUDSON RIVER RAILROAD, New York, N. Y.

LONG ISLAND RAILROAD, Morris Park, L. I.

PENNSYLVANIA RAILROAD, Altoona, Pa.

KUHLMAN CAR COMPANY, Collinwood, Ohio

The Brown Hoisting Machinery Company, Incorporated.

Special Cranes.

NOTE: See additional Code Words on page 255.

Special Cranes.

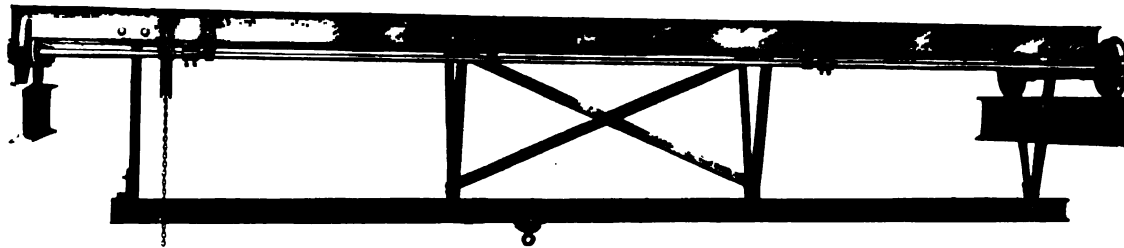
We are often called upon to submit sketches and prices on special cranes to meet various peculiar conditions and requirements.

Our experience in designing such cranes has been varied and extensive, and we are always ready to submit designs and prices on this class of work.

We show herewith a few special cranes recently constructed.

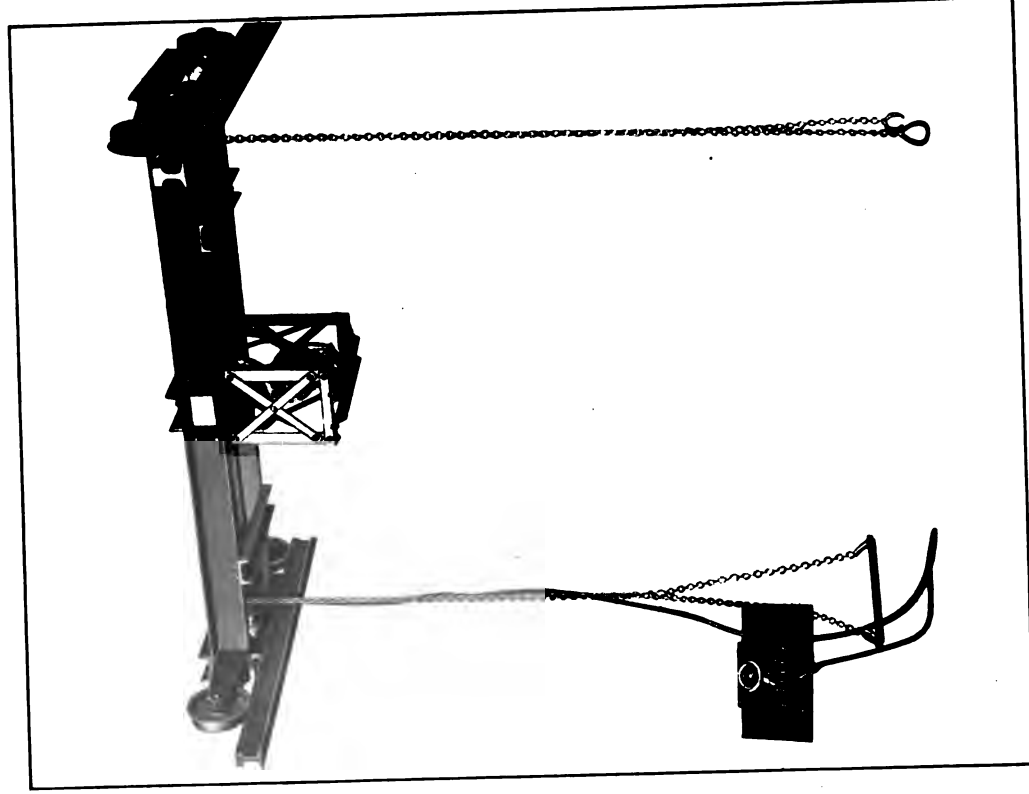
It is absolutely necessary, when asking for prices, etc., to give us full and complete information, and sketch, so that we may fully understand the problem.

As such inquiries require considerable time and thought on our part, we cannot take them up unless these conditions are fully complied with.



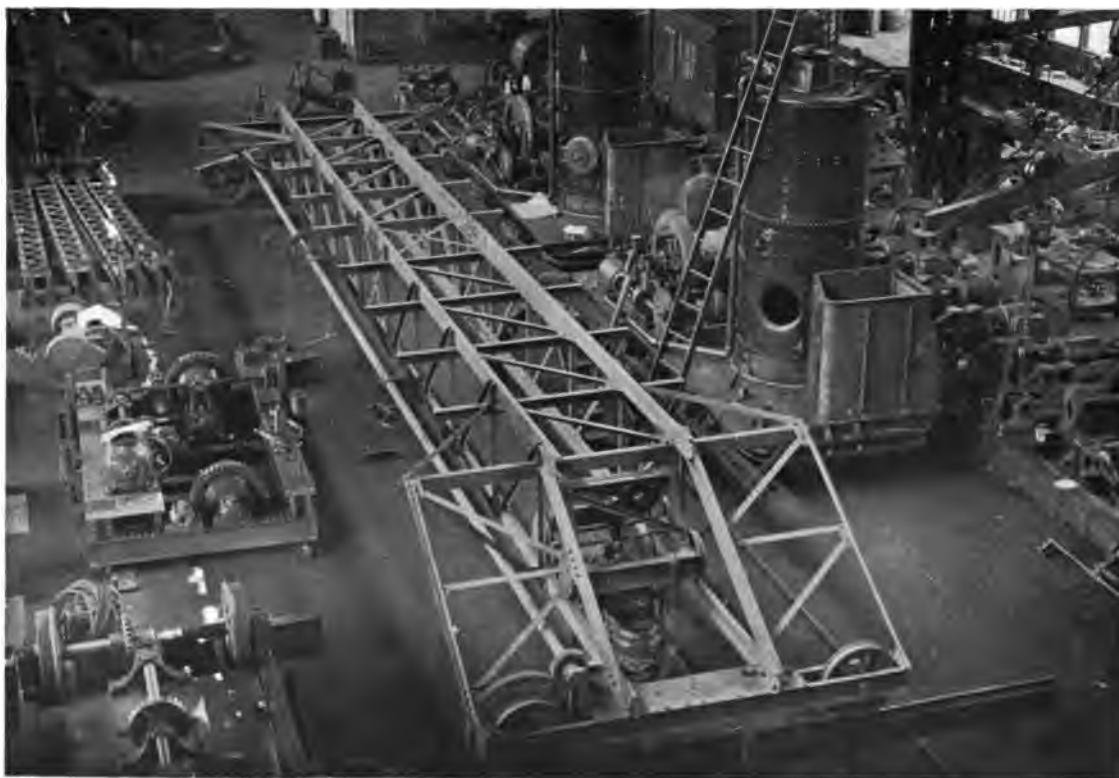
SPECIAL TRANSFER CRANE FOR TROLLEY SYSTEM.

Code Word, GEZAMELD.



SPECIAL ELECTRIC TRAVELER.

House of Relief, New York City.
Used for immersing sunstroke patients in ice water.
Code Word, GEZOND.



SPECIAL PULLEY BLOCK TRAVELER, 5 TONS CAPACITY.

Sprague Electric Co., Watsessing, N. J.



200 POUND PORTABLE CRANE.

U. S. Department of Agriculture, Washington, D. C.
Code Word, **GEDUNSENER.**

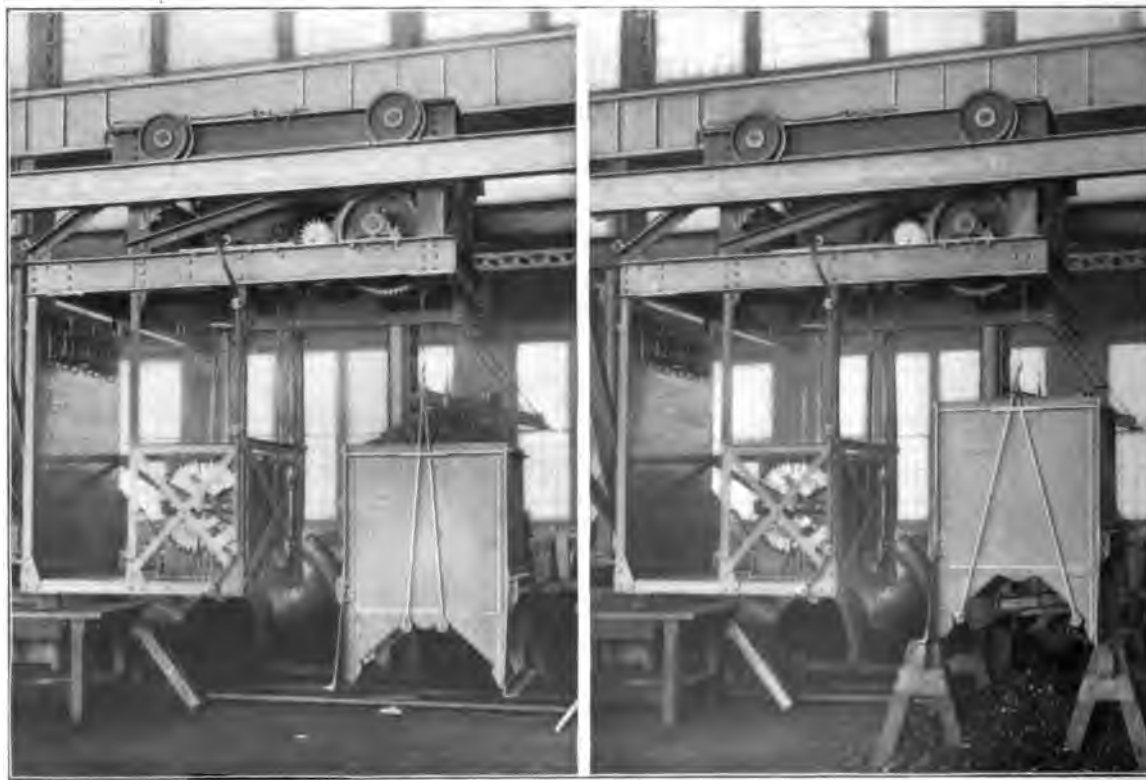


5 TON ELECTRIC TRAMRAIL AND TROLLEY SYSTEM.

The National Carbon Works, Cleveland, Ohio.

The smaller picture shows the trolley or crane on Transfer Table transferring from one runway to the other.
This trolley can carry a load from any part of building to any other part.

Code Word for Crane, **FULCIBLE**.



BUCKET FILLED.

BUCKET DUMPED.

1 TON SPECIAL ELECTRIC TRAVELER.

Alpine Montangesellschaft, Vienna, Austria.

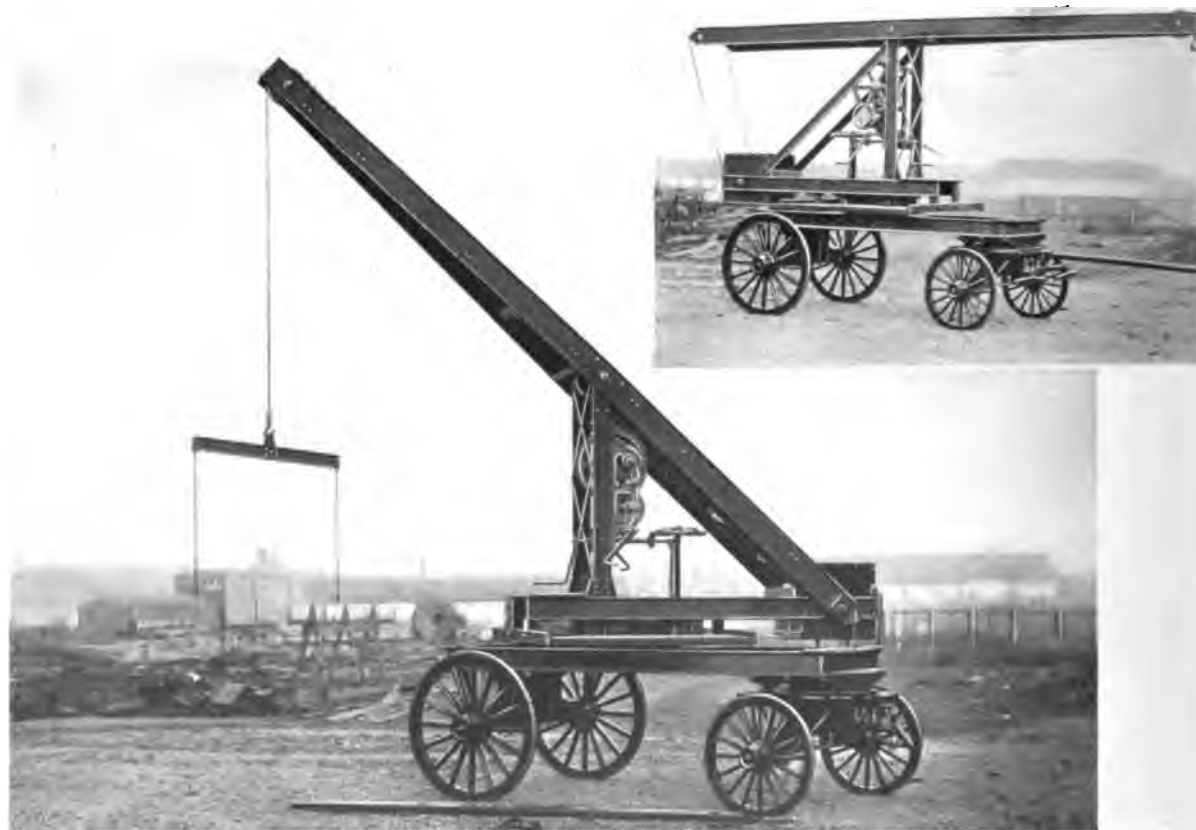
For handling special Coal Tub, which automatically dumps when lowered on to hopper as shown in the pictures. This equipment is especially valuable for use in gas producer houses, boiler houses, etc., for handling coal or other material, where quick manipulation is necessary.

Code Word, FULGESCET.



CONTRACTOR'S SULKEY DERRICK.

Code Word, GHAINOUK.



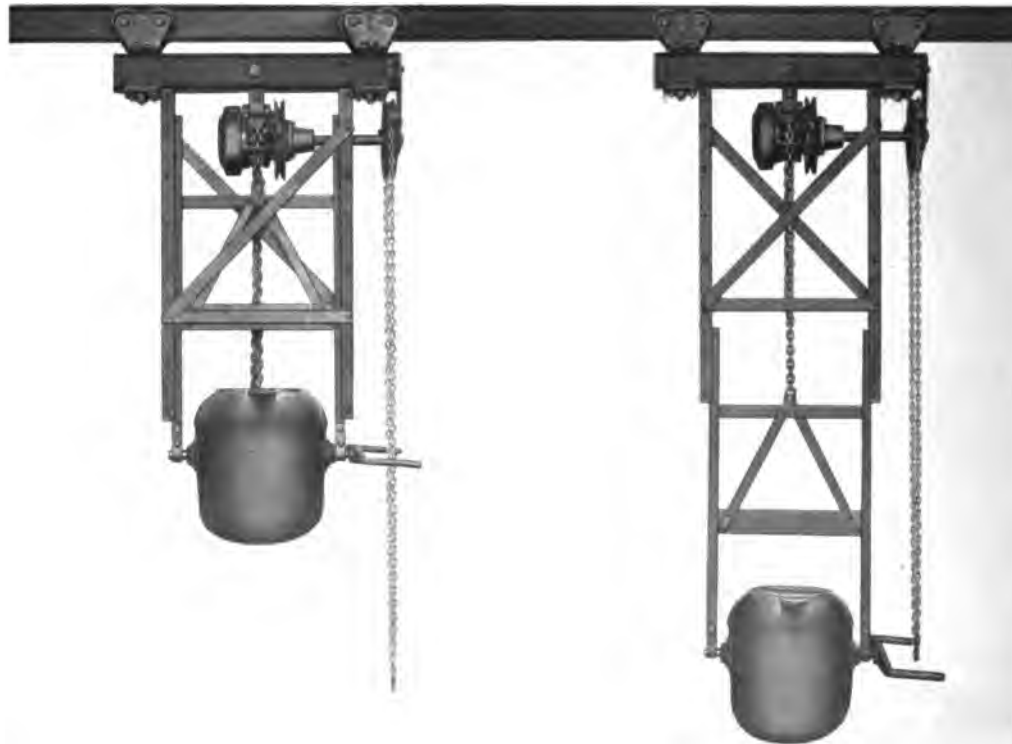
3,000 POUND HAND CRANE.
Mounted on Heavy Wagon Trucks.
Code Word, **GEFLABBERD.**



ICE HOIST.

Code Word, GHARRY.

249



HOISTED.

LOWERED.

LADLE TROLLEY.
With Rigid Bracing to prevent swaying.
Code Word, **GEZWOREN.**



ELECTRIC LARRY FOR HANDLING ORE, COKE, ETC.

Provided with scales for weighing the load.

Carnegie Steel Co., Pittsburg, Pa.

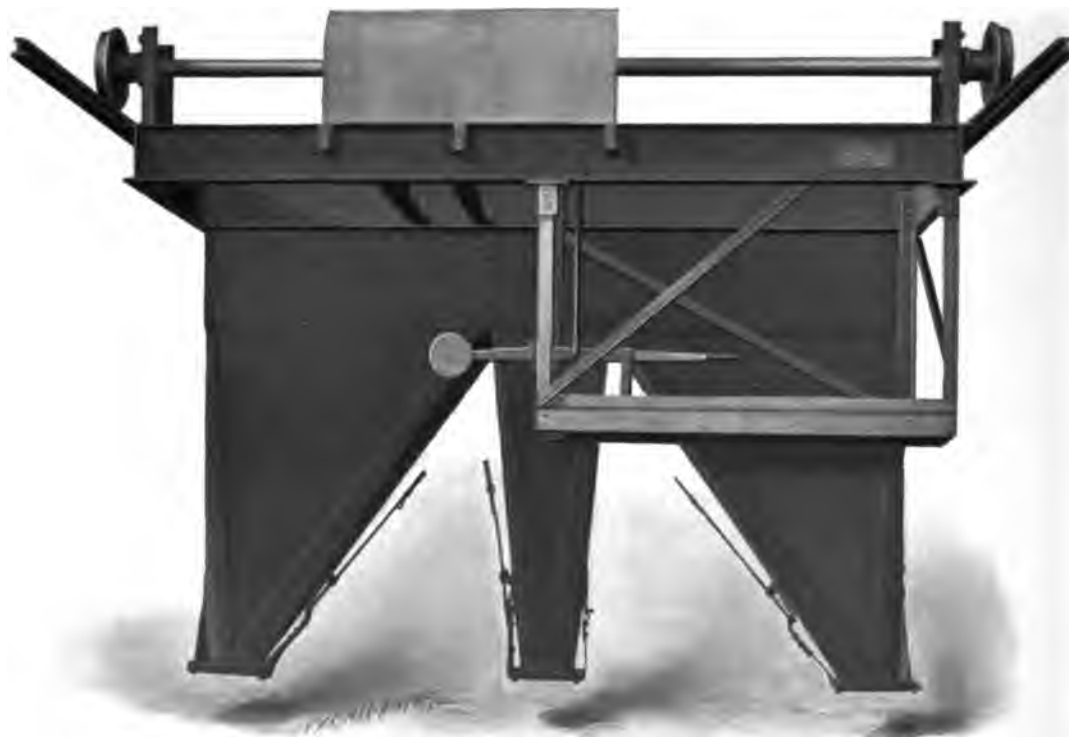
Code Word, **GEZWUNGEN.**



ELECTRIC TELESCOPIC COKE PUSHER.
Code Word, GEVEZELD.



ELECTRIC TELESCOPIC COKE PUSHER—RAM EXTENDED.



ELECTRIC COAL LARRY.

New England Gas & Coke Co., Everett, Mass.

Code Word, **GEVENDE.**

The Brown Hoisting Machinery Company, Incorporated.

Additional Code Words.

In the following list there are additional Code Words to those given in the preceding pages, but it is only intended here to give enough words and meanings to help in making inquiries.

Quotations.

Wire best price F. O. B. New York	GALLULASCO
Wire best price and delivery F. O. B. New York	GALLUCHE
Wire best price F. O. B. Cleveland	GALONEAMOS
Wire best price and delivery F. O. B. Cleveland	GALONEABA
Wire best price, delivery and weights F. O. B. New York	GALLULORUM
Your telegram received, and in answer to same our best price on the apparatus delivered as specified by you is	INCERABIT
Wire us the following information immediately	CAMPECHE
Write us the following information immediately	CERUCHE

Locomotive Cranes.

Gauge of track crane is to run on (in inches)	GERULONIS
3 ft. gauge (or 916 millimeters)	GERVILLIA
1 meter gauge	GERYONEM
4 ft. 8½ in. gauge	GERYONEOS
5 ft. 2¼ in. gauge	GERZERIE
5 ft. gauge	GESABELD
7 ft. gauge	GESALBT
8 ft. gauge	GESALBTER
Height of hoist in feet	GIETZAND
Half Cab	GERUMA
Full Cab	GERULUM
Steam Variable Radius Attachment	GERUNTUR
Hand Variable Radius Attachment	GERUNGEN
Draw Bar Attachment	GERUNZELT
Outrigger Attachment	GERUPFTES
Boiler to be lagged	GERUPFT
Crane to be equipped with Orange Peel Bucket	GERUSTHEID
To have special boom, length in feet	GERVASIO
To have two fixed radii of.....ft. and.....ft.	GERVASIUS

Electric Traveling Cranes.

Single Trolley Standard 3 Motor Electric Crane	GEWEIHEN
Double Trolley Standard 3 Motor Electric Crane	GEWEKEN
Auxiliary Hoist, capacity (pounds)	GEWERBSINN
Machine Shop Service	GEWINNBAR
Foundry Service	GEWINNENDE
Yard Service (outdoor)	GEWIMMEL

Cantilever and Gantry Cranes.

Machine to handle	GIFFLERONT
Height of Elevated Runway (feet) to top of rail (for Cantilever Crane)	GESTEANDO
Span of Crane Bridge, center of double pier track to center of single pier track (feet)	GESTUOSIS
Gauge of double pier track (feet)	GESTUIKT
Height of Crane Bridge in clear (feet)	GESUATI
Height in clear at which hook is to lift load	GESTURORUM
To be driven by electric motor	GETALGT
To be driven by steam	GETALGTES
Chicago Drainage Canal Cantilever Crane	GESTIONAR
Cantilever Crane, Traveling and Revolving	GESTOLD
Cantilever Crane, Traveling only	GESTOHLEN
Cantilever Crane, Revolving only	GESTOMMELD
Shipbuilding Crane	GESTOPT
Radius at which maximum load is to be lifted (feet)	GIETVORMEN
Bridge speed, full load in feet per minute	GIETSTERS
Racking speed, full load in feet per minute	GIETTAFELS
Hoisting speed, full load in feet per minute	GIETTAP
Gantry Crane	GESTITATOS

Stationary Hand Bridge Cranes.

Span between legs in clear (feet)	GEKETTEL
Height from top of track to underside of girders in clear (feet)	GEKEUCHT

Terms Relating to all Cranes.

To be driven by electric motor	GIFTMORD
To be driven by steam	GIFTNATTER
110 Volt Constant Potential Circuit	GESICHT
220 Volt Constant Potential Circuit	GESIDDERD
500 Volt Constant Potential Circuit	GESIEBT
Size Generator required, in kilowatts	GESHEM
Orange Peel Bucket	GEMINAVATE
Total Shipping Weight	GHEZZO
Maximum load to be lifted (pounds)	GIETVAT
Average load to be lifted (pounds)	GIETVORM
Maximum number of trips per hour	GIFFLERAS
Maximum capacity each trip, in cubic feet	GIFFLERIEZ
Span, center to center of rails (feet)	GEWELDIGER
Height, floor to top of runway rail (feet)	GEWENDET
Height, floor to ceiling in clear (feet)	GEWEMEL
Clearance, center of rail to side of building (inches)	GEWELFSTEL
Length of travel of Crane (feet)	GEWELFGAT
Radius at which maximum load is to be lifted	GIETVORMEN
Send man to erect Crane	GIFTBECHER
Gauge of Track	GERULONIS
Variable Radius (Steam)	GERUNTUR
Fixed Radius	GERUNDIO
Curved lower Chord to girders	GEWEHRLAUF

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The Brown Hoisting Machinery Company, Incorporated.

Works: CLEVELAND, OHIO, U. S. A.

Some important plants designed and built by us include:

COAL AND ORE HANDLING PLANTS FOR THE FOLLOWING COMPANIES: Pennsylvania; Lake Shore; Lehigh Valley; Cleveland, Lorain & Wheeling; Columbus, Hocking Valley and Toledo; Toledo & Ohio Central; Wheeling & Lake Erie; Buffalo, Rochester & Pittsburg; Pittsburg, Bessemer & Lake Erie; Philadelphia & Reading; New York Central and other railroads.

Also, Carnegie Steel Co.; Illinois Steel Co.; Tonawanda Iron & Steel Co.; Bethlehem Steel Co.; Coxe Bros. & Co.; Fried. Krupp, and many other concerns in this country and Europe.

CANTILEVER CRANES ON CHICAGO DRAINAGE CANAL. Eleven of our Balanced Cantilever Cranes were in use on the Chicago Main Drainage Canal handling rock from cut to bank, and established the world's record for such work as to quantity handled and cost of same, and no other machines of any kind, on this work or elsewhere, have ever approached these records. The performance of these machines was such as to attract the attention of engineers and engineering societies from all over the world.

COALING STATIONS FOR THE UNITED STATES NAVY. Six Coaling Stations, as follows: Dry Tortugas, Florida (two stations); Key West, Florida (two stations); New London, Connecticut (one station); Mare Island, California (one station).

FLOATING CRANE FOR NEW YORK NAVY YARD. Of 100 tons lifting capacity, built entirely of steel. Total weight, over 1,200 tons. For handling guns and turrets to and from battleships, etc.

The Brown Hoisting Machinery Company, Incorporated.

Works: CLEVELAND, OHIO, U. S. A.

Besides being Crane builders, as shown in this catalog, we are designers and manufacturers of complete plants for the rapid and economical handling of material of any kind, under any condition, in bulk or otherwise.

Our standard machinery embraces:

COAL HANDLING MACHINERY. We have several hundred of our standard machines in operation, and at many points handle the ENTIRE TRAFFIC of the largest transportation lines, WHICH NO OTHER CONCERN MANUFACTURING COAL HANDLING MACHINERY CAN TRUTHFULLY SAY. Our machinery is especially designed to handle coal without breakage.

Our Car Dumping Machine will dump, put into vessels, and trim 5,000 tons of coal in ten hours without breakage.

ORE HANDLING MACHINERY. Above is equally true of our Standard Ore Handling Machinery, except we have ore handling plants in operation taking 7,000 tons out of vessels and loading same on cars or on stock piles in ten hours. We handle the entire ore traffic of many transportation lines. Besides, we have designed and built the only successful machines for storing and re-handling iron ore by power.

TUBS AND BUCKETS. We manufacture Automatic Tubs, Buckets and Skips of steel, with double renewable linings, for coal, ore, etc., that will outlast ten ordinary tubs. Either bail, side, or back latch dump. Also, self filling single rope Brown Patent Grab Buckets, for coal, ore, sand, etc.

CABLEWAYS. With fixed or movable piers. We designed and built the first movable pier cableways ever constructed in this country.

SEWER MACHINES. Two sizes. One having tubs of 32 cubic feet capacity, and the other having tubs of 16 cubic feet capacity.

FURNACE HOISTS AND STOCK DISTRIBUTER. For the automatic charging of Blast Furnaces, doing away entirely with top fillers, etc.

GRIP SHEAVE. BROWN PATENT. Automatically grips the rope and prevents slipping.

Chasmar-Winchell New York and Pittsburgh





Eng 1749.03
Brownhoist cranes /
Cabot Science

004164687



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